Dr. Gerhard Klimeck

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OBJECTIVE

Direct nanoHUB.org and the Center for Predictive Materials and Devices, and conduct nanoelectronic research, high performance computing, and software engineering.

EDUCATION

Ph.D., Electrical Engineering, Purdue University, GPA: 4.00/4.00 1994
Theoretical Thesis: Electron-Electron and Electron-Phonon Interactions in Quantum Transport.
Advisor: Professor Supriyo Datta

Dipl. Ing., Electrical Engineering, Ruhr University Bochum, Germany (equiv. M.S.E.E.) 1990
GPA: 5.97/6.00 (converted from German system), Class Rank 2/167
Experimental Thesis: Laser Noise Induced Intensity Fluctuations in an Optical Interferometer.
Advisor: Professor Daniel S. Elliott, Purdue (work conducted as an exchange student at Purdue).
Engineering Co-op program with Thyssen Mechanical Engineering, RWE, and Siemens AG.

APPOINTMENTS

Purdue University, Elmore Family School of Electrical and Computer Engineering
Elmore Chaired Professor, 12/22-present
Reilly Director of the Center for Predictive Materials and Devices (c-PRIMED) 10/13-present
Professor, Director Network for Computational Nanotechnology (NCN) 05/09-present
Professor, Network for Computational Nanotechnology Associate Director for Technology 12/03-04/09

- Transformation of www.nanoHUB.org - now recognized as NSF science gateways flagship
  - Growth from 500 annual users in 2003 to over 2,000,000 users (as of Dec. 2022)
  - Introduced fully interactive simulations, >22,000 annual users >1,000,000 simulations
  - Lead the analytics work to demonstrate nanoHUB impact in classrooms and research
  - Created a new type of publications now listed in Web of Science and Google Scholar: nanoHUB Scientific Apps used in teaching and duplication of research results.
- Lead the development of NEMO 3-D, OMEN, and NEMO5 development for atomistic, non-equilibrium quantum transport modeling of realistically scaled transistors and quantum dots. Demonstrated critical physics in Si-based transistors and explored alternatives in many other materials systems. Lead model development for quantum computing in Silicon. NEMO5 is now used at Intel to design transistors and commercialized through SILVACO.
- Lead ~15 professional nanoHUB staff members and up to 35 researchers in nanoelectronics.

NASA Jet Propulsion Laboratory, California Institute of Technology
Senior (02/98-9/01), Principal Member (9/01-6/15) of Technical Staff (academic part time 12/03 until 06/15)
Technical Group Supervisor, Applied Cluster Computing Technology Group 4/02-12/03

- Development of an atomistic nanoelectronic modeling and simulation tool NEMO3D, a genetic algorithm optimization and synthesis tool, Parallelization of Mars imaging software

Texas Instruments Incorporated, Corporate Research and Development 9/95-2/98
(transitioned to **Raytheon TI Systems,** Applied Research Laboratories 8/97).
Member of Technical Staff - Nanoelectronics Research Group

- Development and project management of the Nanoelectronic Modeling software (NEMO) (theory, algorithms, user-interface, implementation, verification, documentation and delivery)

University of Texas at Dallas, School of Engineering
Post-doctoral Research Associate - Supervisor: Professor William R. Frensley 2/94-9/95

- Prototype development of NEMO. Consultant to Texas Instruments,

SELECTED HONORS

- Fellow of IEEE, of the Institute of Physics (IOP), the American Physical Society (APS), Alexander von Humboldt Foundation, American Association for the Advancement of Science (AAAS)
- Awarded Proposal Author as PI and lead Co-PI exceeding $116.3M – including 7 center level grants.
- Co/Author of 305 journal, 239 proceedings, 284 invited conferences, 520 contributed conferences
- h-index in Web of Science: 59, Scopus: 60, Google Scholar: 72
- Graduated 43 PhD and 16 Master Students, Supervised: 15 post docs, 5 research faculty, 59 undergraduates.
- 6 US Patents, 12 NASA software, NASA board, NASA Space Act, and NASA Tech Brief Awards

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PUBLICATION SUMMARY

Publication Type	total	Publication Type	total
- Peer reviewed Journals:	305	- Patents:	6
- Peer reviewed proceedings:	239	- Scientific Apps, Tools, Data:	42
- Invited Conference papers:	284	- Technical Reports:	36+
- Contributed conference papers:	520	- Technical Program Reviews:	98+
- Invited Seminars:	191	- Technical Briefings:	111+

Secondary Citations and h-index from Web of Science (WoS), Scopus (Sc), Google Scholar (GS)

Date	WoS Citations	Scopus Citations	GS Citations	WoS h-index	SC h-index	GS h-index	Years past PhD
1/16/2023	*13,599*	*14,944*	*22,555*	*59*	*60*	*72*	*29*

CAREER HIGHLIGHTS & IMPACT

Co-Lead (2003-2009) and Lead (2009-present) the vision and operation of nanoHUB.org

Grew nanoHUB use from 500 annual users to enable 160,000 nanoHUB users to run millions of simulations in the first scientific end-to-end cloud.

Created scientific Apps before Apple in the iPhone.

Over 13 million nanoHUB visitors viewed lectures and tutorials.

The US annually invests $2B in nano research and lots of software and data are generated. But the broader audience cannot learn from these artifacts, because they are not accessible and usable. Therefore, Klimeck led the creation of Apps wrapped around scientific software packages that were previously inaccessible, very hard to use, and required specialized computing hardware. Before the iPhone introduced Apps Klimeck led efforts to package complex scientific software that ran in cluster computers into user friendly nanoHUB-hosted Apps in 2005. He helped to create the first scientific-end-to-end simulation cloud with a global research & education user base, before the cloud became popular. Klimeck morphed nanoHUB, operated by the Network for Computational Nanotechnology at Purdue, from a research network into a national and international Cyberinfrastructure with a global user base in 172 countries.
Over 160,000 users across the globe have run over 7 million simulations on nanoHUB (as on Dec. 2021). nanoHUB also developed into a MOOC with over 190 courses and a library of over 6,000 content items. Over 13 million visitors have utilized this nanoHUB content.

Demonstrate New Approaches in Interactive Education and Translational Research

Research software wrapped in easy-to-use Apps can be rapidly introduced into existing curriculum.

Research software wrapped in Apps can have translational success in adoption by other researchers such as experimentalists or researchers in adjacent fields

Around 1999/2000 the concept of scientific portals emerged with a vision to share scientific software and data that would execute "in the grid". However, almost none of these portals grew to a critical mass of research users beyond their creators. By 2003/05 the community has begun to believe that such portals cannot be used to conduct research and certainly cannot be used in education. Klimeck had a vision to deliver scientific tools in a different way. The hard-to-install, hard-to-use, and computationally intensive software packages needed to be simplified such that experimentalists, educators, and students could use the software without reading massive manuals. The simplifications required the execution of the whole simulation flow including the set-up of the experiment, the execution and monitoring of the execution of the simulation, and the post-processing of the final data. Each of these 3 steps plus the software installation typically require expert knowledge. His NEMO1D and NEMO3D software packages already demonstrated easy-to-use and easy-to-build Graphical User Interfaces (GUIs) and I/O handling. They were indeed used by experimentalists. Klimeck hired Dr. Michael McLennan from Cadence and they created the envisioned specialized Apps. These Apps are geared towards the solution of specific sub-classes of problems that a general tool could handle and to make them easy to use in interactive user-interfaces. McLennan created Rappture inspired by Klimeck's NEMO GUIs and his experience at Cadence. Using Rappture Klimeck created the first interactive tools. Today over 600 Rappture-based apps are running in nanoHUB. But the NSF evaluators stayed skeptical: Can these Apps be used in research or Education?

User Behavior Measurement & Analytics for Impact Studies

In the beginning of Klimeck's nanoHUB involvement he immediately stated: "If we build an infrastructure, we need to measure if it works!". Klimeck led the instrumentation of the apps for usage analytics and developed new impact assessment methodologies. By user-behavior clustering his team was able to show that 79,800+ students in 3,600+ classes at 185 institutions have used nanoHUB simulations in structured education (data as of Jan. 2022). They measured the median time between a specific tool publication and its first adoption in a classroom as less than 6 months, pointing to rather rapid curriculum innovation.
Measuring research impact requires a long-term view as the research and publication process requires a long time and is less predictable in its user behavior. Klimeck created a process to systematically track scientific publications that cite nanoHUB and to evaluate them carefully in various aspects. These aspects include the specific tool cited, the background of the users and the paper (experimental work, theoretical work,

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benchmarking etc.), the institutions, and the resulting social network. As of Jan. 2022, nanoHUB is cited 2,553 times in the scientific literature.

In about 2008 when presented with the first 200 papers that cited nanoHUB the peer reviewers conceded that research may be possible but argued that it cannot be good research. Culture change requires patience and persistence. Klimeck proceeded to measure these citations through secondary citations and as of Jan 2021 identified over 53,000 secondary citations with an h-index of 105.

Learning and Research in The Cloud

"**Learning and research in the cloud**" published in *Nature Nanotechnology* [200] documents at a high level the dual use of tools education and research and demonstrates the classroom identification through usage analytics. Overall, the nanoHUB team overall has not spent a whole lot of time on writing research articles about the use and impact of nanoHUB but has focused on the usability of the tools and the site [72,80,98,110,119, 201, 202, 203,211]. There are also some initial published studies on how users "behave" inside individual tool sessions – do they methodically move through design spaces, or do they jump like wildcatters? [P225, P228] Also collective behaviors of classroom participants [P227] have been analyzed ultimately geared towards providing feedback to faculty members who utilize nanoHUB in their curriculum.

Creation of a new publication type

Web-of-Science and Google Scholar are listing nanoHUB Apps as proper publications since 2017

Early in the modernization of nanoHUB we began assigning DOIs to our nanoHUB Apps in 2005. Klimeck kept re-iterating in public presentations that these apps enable the duplication of scientific results and are in many ways "more important than the scientific paper" since many papers really cannot be duplicated. In 2016 Thompson-Reuters, the owner of Web of Science at the time, approached us if we are willing to list nanoHUB Apps as digital artifacts in the Web of Science.

Since 2017 the Web-of-Science is including nanoHUB Apps as their first scientific application in their publication index. Google Scholar followed suit a few months later. Web-of-Science and Google Scholar automatically polls nanoHUB publications.

In summary: nanoHUB demonstrated three distinct paradigm shifts

A paradigm shift is defined as "*a fundamental change in approach or underlying assumptions*" (Oxford Languages). nanoHUB has achieved that in three different aspects

nanoHUB Apps wrapped around research engines are be used in translational impactful research
(the community assumed that this was impossible).

nanoHUB Apps based on research codes are be used in systematic classroom-based education
(the community assumed that educational tools cannot be based on research grade software).

nanoHUB Apps are new publication types
a new approach – Apps formally listed in Web-of-Science and Google Scholar.

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NEMO – Creating the Nano-Scaled Semiconductor Device Modeling Standard

Theory, Modeling, and Simulation have been key enablers to today's all-pervasive computing, data, network, and web technology. Without process, circuit, and device modeling tools this technology revolution would not have been possible. Moore's law device down-scaling has proceeded since 1965 and has reached device length scales that are counted in atoms and few nanometers. At that length scale carrier transport must be modeled fully quantum mechanically, out of equilibrium, and with a fundamental basis set that is explicitly including every atom in the active device. 30 years ago, the physical scaling end could have been predicted, but it was completely unknown what the right theory, modeling, and software framework might be needed to understand devices at such ultimate scaling limits.

30 years of fundamental and applied research by the Klimeck-led teams have resulted in the Nanoelectronic Modeling (NEMO) tool set that has set the standard for realistic nano-devices today. In graduate school Klimeck studied with advisor Supriyo Datta the esoteric Non-Equilibrium Green Function (NEGF) formalism and applied it to resonant tunneling diodes. At Texas Instruments (1994-1998) Klimeck built NEMO1D which established NEGF as the state-of-the-art standard for quantum transport theories and standard for room temperature quantum devices such as resonant tunneling diodes (RTDs). RTDs were the first quantum transport devices operating at room temperatures. The modeling of their critical layer thicknesses of about 5nm and extended contacts forecasted the needs for today's nano-transistors. He established the representation of the nanoscale materials in an atomistic tight-binding basis, rather than the widely accepted continuum models such as effective mass or k•p. At NASA-JPL (1998-2003) Klimeck built the first multi-scale, multi-million atom electronic structure code NEMO3D. Also, at JPL he established the needed atomistic tight binding parameterizations for standard semiconductors (Si, Ge, SiGe, and (AlGaIn/AsPSb) and their alloys). Since 2003 he has generalized these concepts at Purdue with OMEN and NEMO5. By 2004 most advanced modeling groups had adopted NEGF as a standard. By 2010 atomistic tight-binding, rather than continuum effective mass or k•p theory was accepted as the appropriate standard to represent the underlying materials.

Even by 2015 most commercial technical computer aided design tools (TCAD) for transistors do not even acknowledge the existence of atoms; everything is a continuum. Quantum mechanical effects such as tunneling or quantized bands are at best patched into semi-classical approaches that are based on a local equilibrium. NEMO5 establishes a completely different standard: atomistic device resolution, fully quantum mechanical, with full energy resolution to include non-equilibrium effects.

NEMO development and use impacted **several distinct areas:**

Industry Standard for nano-scaled transistor simulation

- 2013 and 2014 the International Technology Roadmap for Semiconductors (ITRS) adopted physics-based NEMO device models. NEMO replaced MASTAR a lump-system scaling model to provide meaningful device performance predictions looking forward 3 to 10 years.
- Intel integrated NEMO5 into their in-house TCAD tool chain to explore and design nano-scale transistors since 2015
- SILVACO commercializes NEMO5 as Victory Atomistic since 2018
- Samsung hired former NEMO team members to re-implement NEMO5

Modeling Standard in NEGF, Tight-Binding, and High-Performance-Computing

- NEGF is the accepted theoretical approach for nanoscale devices since about 2004. Many groups began to implement their own NEGF versions, typically in effective mass (single band).
- Tight-binding with experimentally accurate band structures is the atomistic basis standard since about 2010. Even today there are very few implementations that scale to realistically extended devices.
- Created implementations that run on single CPUs, small clusters, and the world's largest supercomputers. OMEN is one of the 5 codes that could run at the peta-scale in 2011 on the full Oak Ridge Supercomputer Jaguar at 220,000 cores. NEMO5 scales to the same level.
- Hundreds of user groups have downloaded and used NEMO3D and NEMO5 from nanoHUB.
- Over 20,000 Google citations to over 500 publications refer to results obtained with NEMO

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Outreach and translational research via nanoHUB.org.

NEMO powers 9 Apps on nanoHUB that have served over 28,000 users in research and education. These tools are cited in research (>300 times) and used in formal classroom instructions.
The original NEMO1D and NEMO3D graphical user interfaces (GUI) and I/O handling guided the design of Rappture which is now the GUI for over 600 nanoHUB apps which served over 160,000 users with 7 million simulations. These nanoHUB Apps were cited over 2,500 times in the literature.

Quantum Computing in Silicon.

The electron wavefunctions in quantum dots or P-donors range over about 1-3 million atoms. NEMO is the only available modeling framework that can tackle realistically extended quantum dots and impurity systems for quantum computing in silicon. Specific achievements are listed in a dedicated section below.

End-of-Moore's-Law – The CMOS Transistor Replacement Search

Concept exploration tool. Specific achievements are listed in a dedicated section below.

a) Tunneling transistors, Superlattice transistors, piezo-electric transistors, topological transistors
b) 2D materials like graphene, TMDs or Phosphorene as well as standard SiGe, III-V, III-N etc.

NEMO enables the exploration and evaluation of these technology concepts and options on the same footing. The exploration is critically going beyond just the "essential" transport mechanisms like tunneling etc. The inclusion of electrostatics in realistically extended devices as well as non-idealities such as band tails and traps is critically needed. Ultimately, despite a lot of effort in the field virtually all these explored options can be **ruled out** as a CMOS replacement at the 5nm scale.

Towards the End-of-Moore's-Law – Nanoscale Transistors and Metals

NEMO provides a unified platform that enables material and design comparisons on equal footing. Comparison across different materials (Si, SiGe, III-V, III-N), geometries (standard 2D, double gate, nanowire, nanosheets), strains, doping, and transport mechanisms are critically needed for technology and design selections. NEMO5 enables such exploration for all these variations on the same footing. This universal ability ultimately enabled NEMO to be adopted as an industrial standard. I estimate that at least 130 (about 1/3) of my research publications since 2006 deal with these aspects.
Specific achievements are listed in the dedicated sections below.

Quantum Dot Modeling

NEMO3D is the only openly available multi-million atom, multi-scale simulation package for quantitative Quantum Dot design and analysis. This quantum dot modeling was a key driver for the development of strain dependent tight-binding parameters in Si&Ge and III-V materials. The interplay between long-range strain in self-assembled quantum dots and their confined electronic structure was clearly revealed.
The NEMO3D capabilities for quantum dots enabled all our work on Quantum Computing in Si.
Few specific achievements are listed in the impact section below.

Resonant Tunneling Diode (RTD) Modeling.

NEMO1D established the "gold standard" to quantitatively predict device performance. NEMO1D explained the fundamental limits of RTDs in terms of peak-to-valley ratios and the origin of valley currents. The critical RTD device dimensions are of the order of 5nm layer thicknesses with extended contacts. The 1994-98 development laid out clearly what will be needed for nano-scaled transistor modeling. Few specific achievements are listed in the impact section below.

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Quantum Computing in Silicon

Klimeck formally began work on quantum computing gates in 2002 with a contract by NSA/ARDA entitled "Nanoelectronic Modeling (NEMO) for High Fidelity Simulation of Solid-State Quantum Computing Gates". In the subsequent 17 years he partnered with three experimental groups:

1) Mark Eriksson (Wisconsin): electrically gated Si quantum dots in Si quantum wells on strained SiGe.
2) Michelle Simmons (Sydney, UNSW): single P impurity quantum dots in Si through STM lithography.
3) Andrea Morello&Andrew Dzurak (Sydney, UNSW): single P impurities in Si through implantation.

Answers to theoretical and experimental questions were obtained with the NEMO3D software in the Klimeck team. The key success was the ability to model realistically extended devices that included millions of atoms. These collaborations resulted in many highly visible articles such as *Nature Nano, Nature Physics, Nature Communications, Science* and even at *IEDM*. Some of the work is summarized in this highly cited review of modern physics article "Silicon Quantum Electronics" co-authored with 8 other leaders in the field.

Valley splitting (VS) in Si

Energetic proximity of quantum states fosters decoherence in quantum computing and it is desirable to separate the excited states as far as possible from the ground state. VS in Silicon stems from the 6-fold degeneracies of the Si conduction band. VS has been modeled with the standard effective mass theory for decades. However, detailed measurements for Si quantum wells on SiGe substrates could not be quantitatively explained. Our work is described in [176,142, 90, 79, 60, 57, 54, 47]

- VS results from interference of multiple states constituent of Bloch waves that are on the atomic scale. Spatial variations on the atomic scale modify the interference. These Bloch waves are not included in an envelope function approach such as effective mass.
- SiGe is a random alloy. A Si-SiGe interface is rather rough and disordered at the nanometer scale.
- SiGe is typically grown on a 2 degree slant, to achieve a smooth surface. The single atomic steps are disordered with specific patterns.
- A fully atomistic electronic structure model (NEMO) which can simulate systems of 1 million atoms can explain the observed experimental valley splitting.
- Valley-Orbit splitting subsequently emerged for qubits [150]

Single and dense P impurities in Si via STM

Prof. Michelle Simmons (Sydney) pioneered an STM-based lithography method to place P atoms on top of a Si surface. With this method she can create wire patterns that connect to single or multiple neighboring P impurities. Each individual P impurity acts as a quantum dot. Very densely placed P impurities create a semi-metallic wire that is just one atom tall embedded in Si. Our work is described in a series of publications including in *Science, Nature Nano, Nature Physics, Nature Materials, PRL, and IEDM*.

- **Single Atom Transistor**: Is it really a single P atom? Why can this single P atom stably hold 2 electrons? Can the charging energies in the Coulomb diamond be quantitatively explained? [215,174 *in Nature Nano]*
- **Ohm's law survives at the atomic scale**: Why is P-impurity based wire that is 1 atom tall and 4 atoms wide still conducting like a metal? What is its electronic structure? What is the impact of unavoidable spatial irregularities? Do they break the symmetry and destroy the conduction? [172 *in Science*, 197, 167,220]
- **Spin, Spin-Blockade, Exchange, Decoherence, All-Electrical Control, Transport in Chains:** determination of interactions that form the basic qubit building blocks in P-based Si quantum computing. [206 *Nature Materials*,208 *Nature Nano*, 214 *PRL, 279 Nature Nano, 252*]
- **Quantum Simulation:** Hubbard Model in P-Impurities [245 *Nature Comm.*]

Single P impurities in MOS architectures

Profs. Morello and Dzurak implant individual P impurities into MOS-like geometries. Prof. Rogge analyzed accidental individual impurities in FinFETs.

- **Scalability issues for qubits**: spin-orbit interactions [287], long-distance qubit coupling [272, *Nature Comm*.], spin-qubit transport [252],
- **Qubit control**: controlling spin qubits [225 *Science Advances*], control nuclear spin in Si-29 [216 *PRL*]
- **Decoherence**: Spin-valley lifetime [196 *Nature Comm*.], lifetime enhancements [159 *PRL*]
- **Metrology**: non-invasive determination of experimental impurity placement and species [102 *Nature Nano*, 187 *Nano Lett*., 152 *IEEE EDL*, 250 *Nature Nano*]
- **Orbital Control**: Orbital Stark Effects [122], g-factor control [121]

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End-of-Moore's-Law – The CMOS Transistor Replacement Search

Moore's law has been conceptually enabled by the power reduction in individual devices and the proportionally higher packing of ever smaller devices in the same area while maintaining the same total power consumption. Device sizes have continued to shrink albeit at a slower pace since 2010 yet the threshold voltage down-scaling has stalled since about 2010. The lowest CMOS threshold is determined by the thermionic limit of a MOSFET at 60mV/dec subthreshold slope (SS) and device noise margins. A new type of transistor would be the only hope to reduce the SS to below 60mV/dec and therefore reduce power consumption.

Various private-public partnerships emerged to create research centers to find the CMOS replacement switch starting around 2003 (NRI, SRC/DARPA, FCRP, STARnet). Klimeck was funded through various such research centers to help model and explore new concepts (MSD, MIND, FAME, LEAST). He partnered with several experimental groups to guide and predict experiments.

The following items highlight some of the device concepts explored with NEMO, their modeling challenges, and their ultimate failures. The transistor concepts typically rely on energetic filtering to prevent high energy electrons to leak through the device and therefore enable a sub 60mV/dec SS. In all of these devices a full-band atomistic model that can encompass realistically extended devices that includes realistic gating is needed to tackle the problems.

Graphene-based TFETs

Graphene is ideally 1 atom tall and need to be scaled to a few nanometers in lateral size to open a bandgap. The modeling challenges are the creation of a realistic basis set that can properly model edge states [153,210,P165] and perform a detailed electrostatic gating calculation over the whole extended device. Line edge roughness induced device-to-device fluctuations [P120,117], realistic ripples [193], strain [P197] as well as the very challenging electrostatics [251] point to practically extremely difficult manufacturing constraints. Few of these devices have been built in research labs that have decent performance characteristics.

Industrial manufacturing seems unfeasible at this stage. [302 *npj 2D*, 251, 210, 193,153,111,95]

TMD-based TFETs

TMD-based materials follow in principle the path of graphene except that the materials themselves have natural bandgaps and therefore do not rely on lateral lithographic precision. Electrostatics are just as crucial here as in graphene. The modeling challenge in TMD is the accurate electronic structure and atomistic representation of the material as well as the proper modeling of the band tails in the bandgap. Critical experimental challenges are doping, low mobility, material growth with high quality. A sequence of publications [226, 230, 233, 237, 239, 240, 276, 278, 286] builds up the modeling capabilities and introduces the concept of electrostatic doping. [255] culminates in a description of potential design rules. Vertical transport across multiple layers enables the modulation of bandgaps and offers performance enhancements [291]. Electrostatics [301] can be used to tune devices into PN-junctions, MOSFETs, and TFETs.

Even if the material challenges were to be overcome the electrostatic control and gate challenges at the nanometer scale appear to be rather stringent.

Much larger TMD-based transistors are currently considered for Back End Of Line (BEOL) processing on top of a normal Si device stack.

Phosphorine-based TFETs

Phosphorine encounters the same challenges as TMDs but adds the feature of an anisotropic effective mass and the potential choice of layer thickness. Design rules [256, 258, 275] and one patent [Pat5] point to potential designs. Applications are all pending the establishment of high-quality growth.

2D-device challenges

Graphene, TMD, and Phosphorine device concepts all are 2D materials that experience the same electrostatic gate control challenges. [283,290] Gate control must be much better than in standard MOSFETs to achieve better-than MOSFET performance.

III-V TFETs

Standard MOSFETs can in principle be doped such that they become TFETs. Si-Based TFETs cannot deliver enough ON-current due to their indirect bandgap [115,131,173] and III-V materials with narrow, direct bandgaps offer the best choice [243, 249]. III-V based TFETS involving InAs or InSb were heavily pursued by the MIND center at Notre Dame (2008-2013). III-V TFETs are also very sensitive to electrostatics and standard 2D MOS configurations will not outperform a MOSFET [115]. A double gate or gate-all-around

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nanowire configuration would be needed. Leakage control concepts derived in OMEN/NEMO resulted in a patent [130, Pat3]. With these insights experimentalists began to explore various 3D geometries to control the active tunneling region in III-V TFETs [264,265] with the Rodwell group at UCSB [244], the Seabaugh and Xing groups at Notre Dame [243,P173]. Realistic band-tails in the band-gap [299], well as trap states [280] at the heterostructure interfaces, and tri-angular well notch states that determine current injection [274] point to possibly detrimental device performance degradation preventing III-V TFETs to really deliver sub 60mV/dec.

Intel started using OMEN and NEMO5 to pursue the exploration of III-V TFETs in about 2011. Intel re-directed research funding from III-V to III-N TFETs as the MIND research center reconfigured to become LEAST in 2013. Manufacturability and lack of overall performance gain seem to have stopped III-V TFETs.

III-N TFETs

GaN based TFETs were heavily pursued by the LEAST center at Notre Dame (2013-2018) as Intel had transferred III-V TFET concept exploration to be in-house and deemed that concept no longer pre-competitive. The built-in strong piezo-electric fields in GaN create effectively a narrow tunneling gap and relieve some of the electrostatic gate control challenges [227, P211]. However, the tunneling injection happens from quasi-bound confined states in the emitter that are filled due to incoherent scattering. NEMO5 was enhanced [274] to include the original NEMO1D model [19] to include thermalization in arbitrary contact potentials to model the proper current injection and devise optimized device designs [293]. The NEMO5 designs appeared feasible, but the experimental implementation attempts stopped with the end of LEAST. Experimental implementation appears to be as challenging and limited as the III-V devices.

Superlattice FETs

Superlattice TFETs utilize a man-made finite band of electron injection similar to a TFET. The Rodwell group at UCSB under NRI funding pursued this device concept. Critical ingredients are the scattering inside the source superlattice and the injection from such thermalized states [267,274] and the ability to represent a realistic 2D ultra-thin body geometry. We adopted the nanowire mode-space [281] capabilities to Ultra-thin body mode spaces to cover realistically large devices [304]. Realistic geometries and designs were derived for the Rodwell group [219, 270,305], however the experimental implementation faced significant challenges.

Piezo-Electric FETs

IBM Research heavily pursued Piezo-Electric devices to lower the SS. Around 2012 IBM approached Klimeck to identify a graduate student who could work with them to model their devices. Zhengping Jiang took a ½ year internship position at IBM research and worked with IBM for about 1.5 years on the design and modeling of these low subthreshold swing devices [190]. In the course of that work he demonstrated that adding "f" orbitals to the existing code is almost trivial and enabled us to include a suite of piezo-electric materials such as SmSe and SmTe into our portfolio.

While these devices do show low SS they ultimately have too large of a physical footprint (300nm) and their speed is too slow (~2GHz), and high line voltage (115V) to compete against nano-scaled CMOS transistors.

Topological Insulators and Superconductivity

NEMO5 can explore topological insulator materials in realistic extended devices [235,233]. The challenges of coupling surface states and bulk states can be explored [236]. Proximity-induced ferromagnetism and superconductivity in topological Bi_2Se_3 has also been explored [221,223].

Personal Conclusion – The CMOS Transistor Replacement Search

Since about 2002 "the whole field" of semiconductor device research has been searching for the replacement of the CMOS transistor. A large set of materials, geometries, and transport concepts were explored. I have observed repeatedly that "simple" estimates of the pure transport mechanism in a specific material, in absence of realistic geometries, gating potentials, contacts, or realistic material properties have lead the field to over-hyped promises of these concepts. When put together into a comprehensive simulation engine one can clearly see that most of these concepts cannot compete with a 5nm Si high performance transistor even if the huge material growth and quality challenges were to be overcome. Fortunately, or unfortunately the NEMO team did not have all the needed capabilities ready in 2003, but we were able to build these as we also worked on transistor scaling. I personally had great hope for the III-V tunneling transistor and apparently so did Intel. In summary, NEMO has proven to be extremely capable to explore complex device physics beyond the end of Moore's Law and it has become the modeling standard.

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Towards the End-of-Moore's-Law - Transistor Scaling

NEMO provides a unified platform that enables material and design comparisons on equal footing. Most research groups have built specific solutions, customized to one specific class of materials and devices that result in research publications that explore some specific concepts. These solutions usually do not include extended contacts or extended electrostatic solutions. Such customizations make the comparison across different materials (Si, SiGe, III-V, III-N), geometries (standard 2D, double gate, nanowire, nanosheets), strains, doping, and transport mechanisms impossible. NEMO5 enables such exploration for all these variations on the same footing. I estimate that at least 130 (about 1/3) of my research publications since 2006 deal with these aspects. A partial list of explorations and conclusions is listed here.

International Technology Roadmap for Semiconductors (ITRS) uses NEMO5

Publication [213] in 2014 shows the breakdown of lumped system models previously used to project nano-scale device performance. The 2013 and 2014 roadmaps included physics-based device models to project future device trends.

Effective masses become design parameters

Effective mass and bandstructure are no longer a material constant. Instead confinement shape, crystal direction, and strain can be used to design specific effective masses and bandstructure. This opens a design space that has previously not been utilized [63, 93, P89, 100, 101, 180, 188, 189, 209, 222, 213, 228, 257].

Such exploration can ONLY be done with a comprehensive atomistic basis that is experimentally accurate at room temperature such as tight-binding. Effective mass models can be fitted a-posteriori to experiments or tight-binding, but by themselves they cannot predict the bandstructure of nano-scaled devices.

Framed slightly differently, although used by most researchers:

The standard effective mass model is not predictive at the nanoscale!

III-V-based transistors will not outperform silicon

III-V materials had been expected to outperform Si devices due to their smaller effective masses and higher electron velocities. However, in general transistors based on III-V materials such as InGaAs will not outperform strained Si transistors at the nanoscale. III-V systems are typically rather non-parabolic and under strong confinement the electron effective mass becomes heavy. Crystal orientation and strain can be used to make the Si effective masses comparable to InGaAs masses. A variety of design guidelines were published with NEMO5 [222,224] in part with industry partners GlobalFoundries.

Heavy masses are desirable in the sub 10nm transistor

For gate lengths of 7nm to 3nm electrostatic gate control becomes an enormous challenge even in nanowire or nanosheet designs. Direct tunneling under the gate potential becomes a critical leakage mechanism that can be reduced by a heavy transport mass. Since the transport is mostly ballistic in a quantum channel the carrier velocity is not a critical design parameter. [180, 181, 188, 189]

Interface roughness and alloy disorder dominate scattering

For gate lengths of 7nm to 3nm atomic arrangements at the wire edge strongly influence the elastic scattering in nanowires and ultra-thin body devices. [191]

Hole bandstructure can push carriers to the edges of wires

Hole bandstructure is highly anisotropic and HH, LH, and SO bands are highly mixed due to the breaking of crystal symmetry. Counter-intuitively holes may accumulate at the edges or perimeter for wires larger then 4nm in diameter. Crystal orientation, wire geometry, and strain are even more important here [109,128,191,228] compared to the electron bandstructure. Some of this work is published with our Intel colleagues [166].

Inelastic phonon scattering is critical in the source – not as much in the central device

The highly doped transistor source injects carriers into the gated central device region. Scattering in the source shapes the injection and gate potential profile in which electrons are injected. Scattering in the central device region occurs but backscattering into the source is relatively small [124 (c249)]. The smaller the nanowire diameter the more important the scattering is. Wires over 3nm diameter have less than a 35% current reduction due to scattering. This effect is conceptually similar to the first NEMO1D results of 1995 which demonstrated the scattering dominated contact source injection into resonant tunneling diodes. The empirical model to treat

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scattering in the contacts was implemented in NEMO5 and shown to be critical to model Superlattice TFETs [267], Sb-based TFETs [243], and GaN TFETs [293]

Experimentally validated III-V transistors

We collaborated with several nationally recognized groups in the understanding and design of III-V and III-N nanotransistors. Jesus del Alamo in InGaAs [149], Suman Datta in Sb-Transistors [204], GlobalFoundries in InGaAs [224], Del Alamo in InGaAs [204]. We also worked with Tomas Palacios on the concept of a GaN based nanowire transistor [297].

All of these III-V transistor explorations refined the NEMO5 modeling capabilities, but ultimately these transistors cannot compete against a 5nm Si transistor.

Interface and bulk trap effects

Traps in electron transport and metrology have been analyzed [152, 157, 280] and incorporated into NEMO5. True transport with the inclusion of traps remains rather challenging to do in quantum transport. Recent work by Kubis with Büttiker probes has shown a general capability.

Phonon-dispersions, phonon transport, thermoelectric devices

Phonon dispersions have been designed for nanowires [172,168,164,163,157] and unfolded for general disordered large cells [212]. The Klimeck group advanced non-linear phonon models [139, 50] and simulated phonon transport with NEGF [262]. These advanced phonon models were also coupled to electron transport to model inelastic scattering and energy loss [124 (c249), 31 (c71), 266] and enabled model extractions for **Thermoelectric Devices** [168].

Personal Conclusion – Transistor Scaling – A tool set is now in industrial use

Since my PhD departure from Purdue in Jan. 1994 I have begun to work on modeling and simulation tool development with the goal to ultimately impact nano-scale transistors. It was clear to me in 1994 that a toolset would have to be built that just did not exist then. For the next 10 years I worked on Resonant Tunneling Diodes and Quantum Dots which exemplified quantum behaviors and allowed for the build-up of technology. Since my 2nd arrival at Purdue in Dec. 2003 I have worked concretely on transistor scaling issues. My group has systematically built up theoretical and algorithmic foundations to address the modeling needs of a sub-10nm transistor. Research publications along the way afforded the students to explore the device physics and validate the tool set. Most of these students are now in industry and NEMO is the industrial standard for quantum transport models in semiconductors.

Towards the End-of-Moore's-Law – Nano-scale metal contacts to any transistor

Transport in nano-scale metals with grain boundaries and interface roughness

Regardless of the choice of nano-scale transistor, electrons must be delivered through metals at that nanometer scale. NEMO5 was designed to be general enough to model transport through any system that can be described by a model Hamiltonian. The challenge in modeling transport through metals at the nanometer scale is like that of semiconductors; a sufficiently sophisticated atomic basis must be used to represent the electronic structure around the Fermi level and interactions due to voids and grain boundaries [207,205]. We modeled the structural details of grain boundaries through molecular dynamics in LAMPPS and imported the large atomic structure into NEMO5 to study the transport through grain boundaries and subject interface roughness [285, P220, P212], line edge roughness [P229] in collaboration with GlobalFoundries and thin copper films with Prof. Appenzeller at Purdue [303].

NEMO5 presents a breakthrough to model metals and semiconductors on the same footing

This is to my knowledge absolutely unique and has not been demonstrated by anyone else.

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Two decades of Tight Binding development - Material Science for Engineering Problems

Electronic Device Designs Required Higher Accuracy than Typical DFT Delivered

In the past 25 years computational material science has made tremendous progress in refinements of Density Functional Theory (DFT). For electrical engineers DFT has enabled relatively recently the rapid exploration of bandstructure in novel material systems such as TMDs that are rather relevant to solid state devices. However there continue to be 4 fundamental challenges that limit the utility of DFT for device modeling: 1) highly accurate bandstructure models are limited to a few tens of atoms. DFT that can handle more atoms loose the needed accuracy in the conduction bands. 2) early DFT codes could not accurately predict fundamental bandgaps, 3) DFT remains a fundamentally zero-temperature theory and bandgaps depend strongly on temperature. 4) DFT is in principle an equilibrium theory. Even NEGF implementations of NEGF do not really incorporate inelastic scattering processes that incorporate energy loss. These limitations still persist today and limit the direct use of DFT for realistically extended devices.

Need to overcome shortcomings of existing Tight-Binding

In 1994 NEMO1D work on resonant tunneling diodes (RTDs) revealed the critical need to include an atomistic basis with bandstructure that is accurate in the conduction band to within about 20meV and effective that are accurate with in 1-2%. Empirical tight binding (ETB) offered the physical content of crystal symmetries and full bandstructure within the relevant valence and conduction band. The available ETB parameterizations, however, were tuned to overall bandstructure within a -20eV to 20eV spectrum and were not accurate enough in terms of bandgaps and effective masses. These available parameterizations were not at all suitable for transport in the conduction and valence bands. Furthermore accuracy of strain effects had not been carefully examined and in fact needed model refinements beyond parameterizations.

Analytical expressions and Genetic Algorithms for high-dimensional parameter fitting

Klimeck collaborated with Boykin to develop ETB representations for GaAs, AlAs, InGaAs, InAlAs, InAs, Si, and Ge that match in bulk experimental bandgaps and effective masses. Boykin derived analytical effective mass and bandgap expressions in terms of ETB parameters [17 (c74), 26(c36), 48 (c479)] (c=citation count) associated with material parameterizations. The early fitting process remained tedious at best and did not result in parameterizations exchangeable atomic representations. For example, “As” was note the same atomic representation in “GaAs” and “InAs”. Klimeck embraced Genetic Algorithms (GA) for multi-dimensional optimizations that also considered the analytical results for gaps and masses and advanced the ETB model for accurate treatment of strain [28 (c156) ,29 (c137), 36 (c261), 37 (c298), 48 (c497)] with citation counts. This work in the time of 1995-2004 and the associated material parameters have been adopted widely by the field. The adoption can be somewhat measured by the large citation counts considering the field of tool builders is quite small.

GA-Framework used in several other fields (space flight, MEMs design, circuits)

As a side remark – Klimeck’s GA framework was general enough to be used for inverse designs of circuits [P22 (c32), P24 (c134)], space flight systems [60 (c16)], space craft trajectory planning [Seungwon Lee], and MEMs Gyroscopes. It won a “Human-Competitive awards in genetic and evolutionary programming” award in 2005.

Direct mapping from DFT to Tight-Binding

The GA-based tight-binding parameterization process was much more robust than pure manual fitting. However, the thorough fitting of a “new” material still required at least 4 weeks of work and careful attention. In addition, new materials such as TMD or Phosporine had very limited experimental data and DFT had to be the base to describe these materials. As DFT bandgap and effective mass accuracy increased Klimeck’s group developed a generalized procedure to map DFT orbitals and bandstructure to ETB [184, 259] which was utilized for III-V, metals, TMD, Graphene, Phosphorine, topological insulators, MgO and new environmentally aware ETB Models. These methods now include a specific spatial resolution of the atomic basis, which was not present in the original ETB. Recently Kubis extended NEMO5 to incorporate Wannier function basis sets directly from DFT.

Passivation of surfaces

Practical usage of ETB in 3D geometries requires the termination of the simulation domain at real or computational surfaces for embedded structures. The usual approach of periodic boundary conditions is rather inappropriate for individual devices. An exposed ETB surface has dangling bonds which will result in localized

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surface states with energies spanning the bandgap in semiconductors. Klimeck devised a method to passivate the surfaces in embedded structures [49 (c265)]. The high citation count reflects the wide adoption in the narrow field of tool builders. The method dated from 2004 was shown in 2016 to be equivalent to hydrogen passivation [260] and generalized to passivation with any surface element.

Tight-Binding naturally models Topological Insulators

Interestingly enough, the proper surface passivation reveals topological states in materials such as Bi_2Se_3 and Bi_2Te_3 without further adjustment. ETB contains all the physics needed to study surface and bulk effects of topological insulators [226]. Again, this is a huge advantage over typical effective mass models where researchers basically need to feed in artificial potentials or coefficients to "generate" the topological surface states.

Klimeck established Tight-Binding in the field of electronic device modeling as a standard

Klimeck established ETB in the field of electronic devices as a very practical compromise between ab-initio methods like DFT in the material science community and continuum effective mass theories in the electrical engineering community. ETB cannot model the total energy of a material and give insights over the stability of bonds. However, for semiconductor devices, we assume that the bonds and the overall Chemistry are stable.

Electronic device engineers can live with a less rigorous atomistic model. The ETB method balances physical content (symmetries, bonding, surfaces, exchangeable potentials) and close neighbor coupling to enable the modeling of realistically extended devices with millions of atoms. Significant existing shortcomings such as insufficient parameterizations, lack of accuracy in strain models, explicit representation of the 3D basis, and surface passivation were overcome in about 2 decades of work.

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STRATEGIC HIGHLIGHTS & IMPACT AT PURDUE

- **09/2018 – 03/2019: Sabbatical and Remote work at University of Hamburg**, Center for Hybrid Nanotechnology. Established new collaboration on Hybrid Electronics
- **2016-19: Renewal of the Network for Computational Nanotechnology (NCN)** – development of strategic plan and proposal for a sustainable nanoHUB as a global platform. 5-year proposal worth $14.5M from NSF, solely to be spent at Purdue on CI development and operation, assessment, and education research.
- **2017-19: LEDcentral, LLC** – co-founded start-up company with Prof. TIllmann Kubis to drive the commercialization of Light Emitting Diodes Simulation tools.
- **2013/--: Leadership in the Center for Predictive Materials and Devices (c-PRIMED)** – Develop strategies to connect Purdue to the Materials Genome Initiative, Named the Reilly Director of c-PRIMED
- **2011/12: Reconfiguration of the Network for Computational Nanotechnology (NCN)** – development of strategic plan and proposal for the next generation nanoHUB. 5-year proposal worth $14.5M from NSF, solely to be spent at Purdue on CI development and operation, assessment and education research.Potential for renewal for another 5 years.
- **2012-2018: iCHEER - Institute for Continual Hub Enabled Education and Research** – director of newly formed center at Purdue to promote the use of nanoHUB for Purdue content. Purdue commitment exceeds $5.7M for 5 years.
- **2012-2018: NEMOco, LLC** – founded start-up company to drive the commercialization of NEMO5 software. Start-up dissolved in 2018.
- **2006: Leadership at the Network for Computational Nanotechnology (NCN)** – development of strategic plan and follow-up proposal for years 6-10. Proposal worth $18M from NSF and $5M in cost-share. Annual reports and annual site visits for years 2-9 – annual center renewals.
- **2011: Programmatic Development of a ManufacturingHUB in support of small and medium enterprises** – Closely interacted with the Office of Science and Technology Policy / The White House on the development of a modeling and simulation HUB for small and medium manufacturing companies based on HUBzero technology. Engagement with the Purdue Technology Assistance Program and the school of Industrial Engineering.
- **2010-2012: Strategic Partnership between Purdue and the Country of Colombia** – Effort led by Profs. Arvind Raman and Jean Paul Allain. Developed stategy for Cyverinfrastructure enabled collaboration, research engagement, and economic development. Enabled development of a nanoHUB mirror in South America. Provided one-on-one briefings to the Colombian Minister of Education María Fernanda Campo (twice) and Secretary of economic development if the Bogota district, President of the science and technology council, Codiciti, Hernando Gomez. Effort leads to about 40 fully funded students from Colombia in nano and bio research areas per year for five years.
- **2009-2017: Industry Engagement** – Transferred OMEN and NEMO5 tool suite into the Intel TCAD and Strategic Research Groups. Collaborated withana Intel on modeling capabilities and requirements. OMEN and NEMO5 are currently being used at Intel for the exploration of end-of-roadmap transistor devices. Transferred NEMO5 code to Global Foundries and Samsung. Engaged Global Foundries, Samsung, Lockheed-Martin as new industrial members of NCN, joining Intel and SRC.
- **2006/07: Conceptualizing the HUBzero.org framework** – In close collaboration with Dr. Michael McLennan conceptualize ideas for nanoHUB abstraction into HUBs for any other science and engineering area. HUBzero.org now supports over 40 other HUBs in many different fields of Science and Engineering. Developed the concept of a Purdue IT HUB infrastructure group that was led by Dr. McLennan until 2016. In 2020 the HUBzero group under the leadership of Dr. Michael Zentern transitioned to the San Diego Supercomputer Center.
- **Transformation of nanoHUB.org -** nanoHUB has operated a batch-oriented web-submission system that allows remote users to run nanotechnology simulations since 1996 [PUNCH – Purdue University Network Computing Hub]. Historically around 500 to 1,000 annual simulation users were served with such

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simulation services. As the NCN Technical Director Klimeck drove the deployment of the middleware that allowed interactive simulations. The nanoHUB team developed a new, stable, and fully operational middleware system that replaced PUNCH in April 2005. Since then the annual simulation user numbers have climbed above 21,000 with over 1 million simulation runs (data as of Dec. 2022). Over 700 interactive tools have been deployed. The key to this increase in user numbers is the usability of the HUB.

- **Interactive Simulation Concepts for nanoHUB.org**–most science gateways and portals do not enable true interactive simulation and data visualization. However, such interactivity is needed to inspire users to ask "what if?" questions rapidly. Based on the user interface concepts developed around NEMO1D (C-based automatic GUI generation), and NEMO3D (2 approaches: 1) tcl based automatic GUI generation, and 2) XML-based GUI generation using WIGLAF developed at NASA/JPL) created requirements for future nanoHUB simulations in 2004. Dr. Michael McLennan took these requirements and built Rappture for the nanoHUB environment in consultation and testing with Gerhard Klimeck. Rappture is now being employed in over 600 software projects, over 600 software tools on nanoHUB use it. (as of Dec. 2021)
- **Nanoelectronic Modeling Research** - Lead a research group of around 26 graduate and undergraduate students plus 3-4 post-doctoral researchers and research faculty in the development of nanoelectronic modeling tools. Initiate and guide the development of the next generation nanoelectronic modeling tools OMEN and NEMO5.

STRATEGIC HIGHLIGHTS AT JPL

- **Center for Evolutionary Computation and Automated Design at JPL** – Transformation of successful individual research projects in genetic algorithm development and use to a center level effort at JPL (Center is led by Dr. Richard Terrile at JPL).
- **Formation of a Nanoelectronic Modeling team at JPL** – Connect the High Performance Computing group at JPL to the Microdevices Laboratory at JPL through the creation of a modeling team with critical mass.

COMMUNITY IMPACT AT PURDUE

Deployment of interactive Simulation Tools on nanoHUB.org

Personally co-authored 42 simulation tools in terms of their development, user interface-redesign, and/or deployment. Over 85,000 users ran over 2.7 million simulations with these 42 tools (total count as of Feb. 2022).

Virtual Support of Remote Education via Simulation Tools on nanoHUB.org

Over 11,200 students in over 776 classes at 64 institutions used at least one one Klimeck's simulation tools in formalized teaching environemnts (homeworks or projects, data as of Aug. 2018).

Nanotechnology Tutorials, Seminars, and Course on nanoHUB.org

Published 350 on-line contributions in forms of interactive Breeze presentations, pdf presentations, and/or Pod-Casts (on iTunes). All "nanoHUB and more" content items have been used by over 596,000 users. (Data as of Aug. 2018)

TOOL DEVELOPMENT HIGHLIGHTS

NEMO5–Strain, Phonons, Quantum Transport, Electronic Structure with atomistic resolution

Envisioned a peta-scale transport simulation tool and received NSF and industrial funding. Guided and advised a team of post-doctoral researchers and research faculty in the construction of a general tool framework (Michael Povolotsy, Hong-Hyon Park, Sebastian Steiger, and Tillmann Kubis). Code combines features and capabilities of NEMO1D, NEMO3D, NEMO3D-peta, and OMEN in a modular structure in which also students can contribute modules. Demonstrated and validated strain, phonon, electronic states, and transport simulations against the predecessor codes. Demonstrated scaling to 100,000 cores. Device physics-oriented studies using NEMO5 are under way.

OMEN–Quantum Transport with atomistic resolution running at the Peta-Scale

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Envisioned a peta-scale transport simulation tool and received NSF and industrial funding. Guided and advised the principal developer of OMEN, Dr. Mathieu Luisier towards the construction of a peta-scale simulation engine, which embodies 3D, 2D, and 1D device resolutions. Almost perfect parallel scaling to over 222,000 processors delivering a sustained 1.4PFLOP was demonstrated utilizing a 4-level parallelism. Utilize OMEN to study band-to-band-tunneling transistors, advanced high mobility transistors, interface roughness in si nanowires, and line edge roughness in Graphene transistors. OMEN has also been extended to include incoherent scattering from structurally influenced phonon spectra.

NEMO 3-D-peta–Electronic Structure towards Peta-scale Computing

Guided the re-write of NEMO3D with 2 graduate students at Purdue: Hoon Ryu and Sunhee Lee. Incorporated full 1D, 2D, and 3D spatial decomposition of arbitrary device geometries. Demonstrated scaling of the code to over 32,000 processors utilizing a generalized parallelism structure of multiple parallel groups. Improved the NEMO3D Lanczos eigensolvers for controlled convergence onto interior spectrum eigenvalues. Applied code for electronic structure calculations of single and dense impurity systems.

NEMO 3-D - Development of atomistic Nanoelectronic Modeling in 3-D

Principal designer and developer of a bottom-up nanoelectronic modeling tool for the analysis of the electronic structure in a nano-scale system based on the representation of each individual atom in the structure. The simulator enables the analysis of electronic structure and optical response in a variety of crystal structures and semiconductor material systems. Demonstrated the simulation of a system as large as 52/64 million atoms for electronic structure / strain simulations, respectively. Parallelized the simulator on a Linux-based Beowulf system and later demonstrated scaling up to 8,192 processors. Scientific impact of the tool is highlighted below.

NEMO 1-D – Comprehensive Quantum Electron Transport

Principal designer and developer of the NEMO software. NEMO is the world's first comprehensive 1-D quantum electron transport simulator including effects due to charging, multiple bands and scattering. Fundamentally based on the non-equlibrium Green function formalism (NEGF), a general purpose quantum statistcal method. Code consists of about 250,000 lines of C/F90 code and is documented with over 3,000 pages. Tool was used for quantitative device design and analysis at Texas Instruments.

Tool was parallelized on three hierarchical levels to enable massive scaling and user flexibility. Demonstrated scaling NEMO 1-D to 23,000 processors on a Cray XT3/4 at Oak Ridge National Lab.

Parallelization of Mars Imaging Software

Converted existing serial Mars imaging software (e.g. mosaic generation from many images, left/right eye correlation for two images) to efficient parallel code. Hardware: COTS Linux-based Pentium III cluster (Beowulf) using MPI. Achieved time reductions from original baseline of 90 minutes to 3 minutes (mosaic software) and 90 minutes to 6 minutes (correlator). This acceleration enables fast feedback (near real-time) to mars rover control [P27, P30].

Genetic Algorithm-Based Optimization and Synthesis

Developed an optimization and synthesis tool based on a massively parallel genetic algorithm (GA) and incorporated various high-level simulation tools into the toolbox. Developed for device design and metrology. Also applied to materials, circuit, and optical filter design.

SCIENCE AND ENGINEERING HIGHLIGHTS

Impacting the Global Semiconductor Industry Roadmap (ITRS)

Introduced quantitative, physics-based modeling into the the ITRS roadmap – replacing a non-physics, lumped system model used for 30 years in device scaling by physics based models. Demonstrated that the lumped system model provides wrong trends and provided guidelines for future improvements based on NEMO modeling results. Results adopted into the 2014 ITRS roadmap document.

Single Impurity Physics

Demonstrated the capability to model ***single Phosphor atom transistors*** in Silicon with NEMO 3-D-peta in close collaboration with Australian experimentalist team around Michelle Simmons. Agreement between

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modeling and experiment achieved without fitting parameter through multi-million atom simulations. Results published in *Nature Nanotechnology*.

Dense Impurity Physics

Demonstrated the capability to model dense Phosphor impurity sheets and wires with NEMO 3-D-peta in close collaboration with Australian experimentalist team around Michelle Simmons. Demonstrated capabilities beyond the usual Density Functional Theory limits of a few atom, ideal cells. Results published in *Science*.

Full 3D Atomistic Carrier Transport

Demonstrated capability to model on an atomistic basis: strained InAs/InGaAs/InAlAs HFETS, band-to-band tunneling transistors, interface roughness in nanowires, line edge roughness in Graphene transistors, patent generated for improved BTBT transistor. Demonstrated incoherent scattering calculation in nanowires with atomistically represented phonons.

Multi-million atom electronic structure with NEMO 3-D

Demonstrated control of electronic states on single impurities in Silicon [89] and experimental / theoretical metrology of single impurities in FinFET transistors (published in *Nature Physics* and IEDM) [101]. Matched optical emission wavelength of an experimental sequence of different quantum dot structures without any parameter adjustments [114, P93]. Provided critical insight into the Valley Splitting in strained Si quantum wells for Quantum Computing [79] matching experiment. Studied effects due to atomic alloy disorder and interface interdiffusion in quantum dots [33, 36, 39, I21-I31]. Optimized material parameters resulted in good experimental agreement for optical transitions in colloidal quantum dots [33, 38]

Quantitative High Bias Quantum Transport in 1D heterostructures

NEMO 1-D is now considered the "gold Standard" in Resonant Tunneling Diode simulation. NEMO 1-D has shown predictive capabilities for devices design and analysis. The world's first high-bias quantum mechanical, simulations of scattering enhanced charging and charge self-consistency of holes and electrons [9-24,P4-P17] for RTDs were generated. Unintuitive quantum transport phenomena [30, 31, 32, 34, 40] were resolved.

Material Science – Tight Binding Parameterization

Performed parameterization of tight banding bandstructure models to achieve the proper representation of basic material properties such as bandgaps and effective masses. NEMO+GA [28, 29, 36, 37]. This synthesis enabled quantitative multi-million atom device analysis.

Electron device synthesis – Inverse Design:

Solved the inverse resonant tunneling diode design problem: what is the structure that will generate a particular current-voltage characteristic? NEMO+GA [P18, P20].

Circuit synthesis:

Enabled a GA based circuit configuration on an FPGA to achieve a Gaussian pulse response. SPICE + GA [P22, P23].

Optical filter synthesis:

Optimized a pattern on a frequency selective surface to achieve optimal transmission and reflection. [P22, P23].

Tight-Binding Model Theory

Collaborated with Prof. Tim Boykin on the fundamental understanding of tight binding models and their applications to quantum transport simulations [25-29].

GRADUATE RESEARCH

- **High Bias Coulomb Blockade** : Initiated analysis of high bias transport in quantum dots. Key investigator of Coulomb blockade at Purdue University [8,P1].
- **Linear Response of Coupled Quantum Dots:** Proposed experiment on conductance spectroscopy in coupled quantum dots and analyzed experimental feasibility [6,7]. This work is cited over 70 times.

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- **Scattering and Incoherent Transport:** Studied and explained the scattering enhanced valley current in RTDs [4,5,9-24,P4-P17].
- **2-D Linear Response:** Analyzed anomalous Quantum Hall Effect in 2-D electron gas system. [3].
- **Laser Noise Experiments:** Implemented high frequency (200MHz) laser amplitude modulation circuitry. Developed laser stability controller (15 kHz) using an external resonance cavity. Measured the propagation of laser noise through optical systems. Calculated and measured higher order, non-linear laser noise fluctuations [1,2].
- **Thin Film Deposition:** Analyzed the experimental feasibility of a novel fast thin film deposition process. Fabricated first clean metallic films (senior project).

SOFTWARE DEVELOPMENT EXPERIENCE

- **Software Project Management**
  NEMO1D and NEMO3D are simulation tools consisting of about 250,000 lines of code each. Personally wrote about 80,000 lines of NEMO1D code and 40,000 lines of NEMO3D code. Tackled issues of software design, documentation, release, graphical user interface design, and maintenance.
- **Hybrid Language Design**
  Developed hybrid C, F77 and F90 code which allows the utilization of the flexibility of object oriented C data structures and vectorization capabilities of F77 and F90.
- **Software Documentation**
  Invented a software documentation tool that allows for a close connection of the development software and its structural documentation. Pseudo code and code are kept in one file but can be presented in a user friendly, interactive form. A similar methodology is now common place with another open source package entitled Doxygen.
- **Numerical Methods**
  Solutions of large, sparse systems of equations, Eigen-value and Eigen-vector analysis of large systems, program vectorization.
- **Software Release**
  Released NEMO code at Raytheon with 3,000 pages of documentation, consisting of User's Guide, Theory Guide and Developer's Guide. At Purdue co-authored and released 2 Purdue University simulation packages: SQUALID-2D and QUEST. Developed QUEST User's Manual and Tutorial [T1,T2].
- **Operating Systems Experience**
  Linux, HP-9000, SUN, IBM-RISC, SGI, IBM SP2, Ardent, and GOULD, MAC, MS.

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TEACHING

- I created 14 of the top 20 nanoHUB tools as ranked by annual number of users (data Feb. 2022). These tools are easily integrated by faculty members into existing curricula. These tools have been used by approximately 30,000 students across the globe. These tools offer a unique way to explore semiconductor device physics.
- My 42 nanoHUB tool contributions have been used by 85,965 users (as of Feb. 2022) who ran over 2.7 million simulations.
- My 342 lectures, tutorials, and classes in nanoHUB have served over 1.04 million visitors in total.

[F09][S10][F10][S11][F11][S12][F12][S13][F13][S14][F14][S15][F15][S16][F16][S17][F17][S17][F17][S18][F19][S20][F20][S21][F21][S22][F22][S23] "ECE 694 - Graduate Student Seminar Course", Mandatory Course for all ECE graduate Students. Purdue University. Instructor Goal: A Professional Development Course instead of arbitrary research seminars. ½ the seminars are Purdue internal presentations the other ½ presentations by alumni on professional aspects of life after graduate school. Covered topics are resumes, paper writing, career planning, interview skills, financial planning. Developed a new syllabus, which includes a massive peer review where students evaluate a complete stack of their 60-100 peers in 45 minutes to enforce them with a view of a hiring manager.

[S10][S12][F12][F20][S21][F21][S22][F22][S23] "ECE 606–Fundamentals of Semiconductor Devices", (S10: co-taught with Prof. Mark Lundstrom, S12: co-taught with Prof. David Janes, and Jim Cooper), Core course in the micro-nano area in ECE. Developed associated crystal structure, bandstructure and quantum transport simulation tools to integrate nanoHUB into the course curriculum.
Deployed a new version of the course into edX in the summer of 2020.
Modified course in Fall 2021 to include projects on quantum dot and nanowire designs instead of midterms.

[F09] "Nanoelectronic Modeling: From Quantum Mechanics and Atoms to Realistic Devices" Ph.D. Short Course, University of Pisa, Oct. 5-9 2009, Host: Prof. Gianluca Fiori. 20 participants from Italy and Europe overall, 41 individual lecture elements - approximately 16 hours of lectures.

[F96] "UTD - Advanced Semiconductor Device Theory" University of Texas at Dallas. 18 Ph.D. and Master students, evening course Text book primarily used: S. Datta, Quantum Phenomena.

- Lead a research group of 25 graduate students at Purdue. Mentor Post-Doctoral Researchers and summer students (see professional services section).
- National Research Council Advisor – 1998-2003.
- Conducted user training sessions for the NEMO software – 1996-1997
- Instructor of the Purdue Jido Kwan Tae Kwon Do club (1991-1994).

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PERSONAL / ACADEMIC ACHIEVEMENTS / SCHOLARSHIPS / AWARDS

Personal / Academic Achievements

- 10/1987 Best in Prediploma Class in Electrical Engineering at the Ruhr University Bochum.
  (Resulted in a full ride fellowship into an exchange program at Purdue, and full ride Fellowships with Friedrich Ebert Stiftung and Studienstiftung des Deutschen Volkes))
- 10/1990 Second Best in Diploma Class in Electrical Engineering at the Ruhr University Bochum.
  (Resulted in a German award by a Foundation for German Science)
- 01/1994 Defended Ph.D. thesis at Purdue University with GPA of 4.00/4.00.
- 03/1992 1st degree black belt, World Tae Kwon Do Federation, South Korea.
- 05/1993 2nd degree black belt, World Tae Kwon Do Federation, South Korea.

Scholarships

- 04/1987-09/1990 Friedrich Ebert Stiftung, Begabtenförderung, Germany
  Full ride scholarship for gifted students providing monthly living stipend and book expenses (there is no tuition at public German Universities).
- 04/1987 RWE Industrial Scholarship
  Three-year scholarship providing stipend for students selected by the Institute of Power Electronics at the University of Bochum (declined receipt due to other received fellowship).
- 02/1988-09/1990 Studienstiftung des Deutschen Volkes, Begabtenförderung
  Most prestigious German scholarship for gifted students from the equivalent of the US National Science Foundation. –
  alternative formulation: He is a member of the "Studienstiftung des Deutschen Volkes", an elite organization sponsoring the 0.5 percent best German students.
- 08/1988-05/1989 Deutscher Akademischer Austauschdienst (DAAD), Integriertes Auslandsstudium
  German Academic Exchange Service Scholarship for support of exchange program participation between Bochum and Purdue, providing travel expenses, living-abroad supplement, and US health insurance.
- 08/1988-05/1989 Purdue University Fee Remission Award.
- 08/1989-09/1990 Friedrich Ebert Stiftung, Begabtenförderung
  Scholarship expansion for tuition and additional living-abroad supplement.

Awards / Recognitions

- 10/1987 Siemens circle of selected, highly qualified students in Engineering and Sciences. Support for a one-week seminar, science books, selected internships and senior and thesis projects.
- 12/1988 Purdue dean's list.
- 1989 HKN - Electrical engineering honor society.
- 1989 TBP - Engineering honor society.
- 02/1990 Permanent Member of the most prestigious German Science Foundation,
  Permanentes Mitglied der Studienstiftung des Deutschen Volkes.
- 03/1991 Foundation for German Science, Prize for the especially fast and very successful completion of studies.
  Stifterverband für die Deutsche Wissenschaft, Preis für ein in besonders kurzer Zeit sehr erfolgreich abgeschlossenes Studium.
- 1992 Best student presentation in Purdue EE Industry Initiative Workshop.
- 07/1995 Recognition of my US PhD degree within the German official title system by the Department of Science and Research.
  Ministerium für Wissenschaft und Forschung des Landes NRW: Zustimmung zur Führung eines ausländischen Grades: Ph.D. (USA) oder Dr. (USA).

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- 10/1996 Texas Instruments Award, Citation: Gerhard Klimeck is recognized for outstanding achievement in the development and demonstration of quantum device design tools. His leadership in developing computer code and documentation for NEMO, a world class device modeling program exceeded customer requirements and helped win follow-on contract. Due to this effort, TI has strengthened its competitive position in nanoelectronics and is viewed by our customers as the industry leader in the development of quantum design tools.
- 1997 DARPA, Ultra Dense, Ultra Fast Computing Components, Award to Raytheon-TI Systems: Sustained Excellence by a Performer in Fiscal Year 1997.
- 2002 JPL, Dr. Edward Stone Award for Outstanding Research Publication, Citation: This paper represents a milestone publication for JPL's entry into the field of nanoelectronic device modeling and simulation for future NASA missions. It is also of value to the international semiconductor industry community. ($4,000)
- 2003 NASA Space Act Award: NPO no. 30520, "Nanoelectronic Modeling 3-D (NEMO 3-D) Upgrade", $600
- 2004 NASA Tech Brief Award: NTR no 30842: "WIGLAF (A Web Interface Generator and Legacy Application Façade)", $350
- 2004 NASA Tech Brief Award: NTR no 30843: "Nanoelectronic Modeling (NEMO 3-D) upgrade to no license restrictions", $350
- 2004 NASA Tech Brief Award: NTR no 30844: "XML-based C++ Code Generation for User Interface Integration", $350
- 2004 NASA Tech Brief Award: NTR no 30834: "Parallel Complex Hermitian Sparse Matrix Eigensolvers.", $350
- 2004 NASA Software Award: NTR no 30630: "Parallel Algorithms for Near-Realtime Mosaic Generation", $500
- 2004 NASA Tech Brief Award: NTR no 30631: "Parallel Algorithms for Near-Realtime Image Correlation", $350
- 2004 NASA Tech Brief Award: NTR no 30632: "Quality Control of Tiepoints Computed from Image Correlation", $350
- 2004 NASA Software Award "Quality Control of Tiepoints Computed from Image Correlation", $500
- 2004 NASA Tech Brief Award: NTR no 30835: "Structure Based input using tcl/tk", $350
- 2004 Purdue Seeds of Success Acorn given by Vice Provost for Research, research award exceeding $1M
- 02/2005 NASA Board Award for NTR no. 30630_30632: Parallel Algorithms for Near-Realtime Image Processing in Commodity Cluster Computers, $2,000
- 2005 listing in AcademicKeys Who's Who in Engineering Education (WWEE): http://engineering.academickeys.com/whoswho.php?dothis=display&folk[IDX]=281441 http://Engineering.academickeys.com/index.php
- 08/2005 Human-Competitive awards in genetic and evolutionary programming– the "HUMIES", $1,000 shared with Richard J. Terrile, Hrand Aghazarian, Michael I. Ferguson, Wolfgang Fink, Terry Huntsberger, Didier Keymeulen, Gerhard Klimeck, Mark Kordon, Seungwon Lee, Boris Oks, Chris Peay,Anastassios Petropoulos, Paul von Allmen. Karl Yee, Jet Propulsion Laboratory, paper titles: "Evolutionary Computation Technologies for the Automatic Design of Space Systems", "Evolutionary Computation applied to the Tuning of MEMS gyroscopes", "Multi-Objective Evolutionary Algorithms for Low-Thrust Orbit Transfer Optimization", http://www.genetic-programming.org/hc2005/cfe2005.html
- 2005 Purdue Seeds of Success Acorn given by Vice Provost for Research, research award exceeding $1M
- 06/2006 NASA Tech Brief Award for NTR no 41155: "Efficient boundary condition for embedded semiconductor nanostructure modeling", $350
- 2006 Purdue Seeds of Success Acorn given by Vice Provost for Research, research award exceeding $1M

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- 08/2007 NASA Board Award for NTR no. 41155: "Efficient boundary condition for embedded semiconductor nanostructure modeling." $500
- 2007 Purdue Seeds of Success Acorn given by Vice Provost for Research, research award exceeding $1M
- 12/2007 NASA Tech Brief Award for NTR no 30630: "Parallel Algorithms for Near-Realtime Mosaic Generation", $350
- 2008 Purdue Engineering Team Award shared with Mark S. Lundstrom and Michael McLennan. $1,000 award per awardee and a $10,000 research funding award. Citation: "For his role in the creation of nanoHUB and its impact on the cyberinfrastructure for the national nanotechnology initiative leading a cultural change in research and education.
- 2008 Purdue Seeds of Success Acorn given by Vice Provost for Research, research award exceeding $1M
- 2009 Purdue Seeds of Success Acorn given by Vice Provost for Research, research award exceeding $1M
- 2010 Purdue Seeds of Success Acorn given by Vice Provost for Research, research award exceeding $1M
- 2011 Purdue Seeds of Success Acorn given by Vice Provost for Research, research award exceeding $1M
- May 2011, Elected Fellow Institute of Physics, citation: "For the development, application, and dissemination of atomistic quantum simulation tools for nanoelectronic devices."

  https://engineering.purdue.edu/ECE/News/2011/professor-gerhard-klimeck-elected-fellow-of-american-physical-society
- 2011 Campus Technology Innovators Award - Category: IT Infrastructure and Systems, "HUBzero Platform for Scientific Collaboration", Michael McLennan, George B. Adams III., Mark Lundstrom, Gerhard Klimeck;
  10 winners were selected in six categories, out of 393 nominations submitted from higher education institutions around the globe. Entries were reviewed by our Innovators Judging Committee, a group of higher ed tech leaders, many of whom are former Campus Technology Innovators award winners. Final winners were chosen by our expert team of editors.
- 2011 Best Student Poster award.Seung Hyun Park wins a best poster award at the IEEE NMDC conference on Jeju Isand, Korea. The title of the poster is "Contact Modeling and Analysis of InAs HEMT Transistors". Co-authors and award winners are Hong-Hyun Park, Mehdi Salmani-Jelodar, Sebastian Steiger, Michael Povolotsky, Tillmann Kubis, and Gerhard Klimeck. There were 12 awards out of about 170 posters at IEEE NMDC.
- 2011 Gordon Bell Prize Competition Finalist, Received Honorable Mention: Mathieu Luisier, Timothy B. Boykin, Gerhard Klimeck, Wolfgang Fichtner, "Atomistic nanoelectronic device engineering with sustained performances up to 1.44 PFlop/s", IEEE and ACM Supercomputing 2011, Nov 12-18, 2011.
- Nov. 2011, Elected Fellow of the American Physical Society, citation: "For the development, application, and dissemination of atomistic quantum simulation tools for nanoelectronic devices." https://www.aps.org/programs/honors/fellowships/archive-all.cfm?initial=K
- 2012 Purdue Seeds of Success Acorn given by Vice Provost for Research, research award exceeding $1M
- Dec. 2012, Elected Fellow of the IEEE, citation: "for his contributions to atomistic quantum simulation tools for nanoelectronic devices" https://ieeenano.org/about/ieee-fellows-of-the-nanotechnology-council
- 2013 Intel award for contributions to the NEMO5 simulation software tool
- 2019 Purdue Seeds of Success Acorn given by Vice Provost for Research, research award exceeding $1M
- 2019 Humboldt Foundation Research Prize, at Charlottenburg Palace in Berlin, Germany. Attending the ceremonies were Germany's Chancellor Angela Merkel and President Frank-Walter Steinmeier. The international Humboldt Research Award is one of the most prestigious awards in science and is given each year to researchers from all academic disciplines by Germany's Alexander von Humboldt Foundation. The award recognizes researchers who have made significant discoveries that have influenced their fields, and who are expected to continue producing such advances in the future.

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Citation: Professor Klimeck is a leading expert in the modeling of nanoelectronics devices. He is well known internationally for building and defining the state-of-the-art in atomistic modeling theory and simulation tools for today's most advanced transistor devices. He also guides the technical developments and strategies of the site nanoHUB.org, which annually serves over 1.5 million users worldwide with online simulations, tutorials, and seminars. In Germany, he continues his research on atomic-scale semiconductor devices to explore new concepts in hybrid nanostructures.

https://service.humboldt-foundation.de/pls/web/pub_auswahlergebnisse.main?p_lang=de&p_bereich=&p_pattern=&p_humboldt_nation=&p_address_country=&p_address_region=&p_address_city=&p_address_uni=&p_host_country=&p_host_region=&p_host_city=&p_host_uni=&p_fgb1=&p_fgb2=&p_fgb3=&p_order_by=N&p_button_search=&p_page=18

- Sept 2020: R&D 100 award winner in Software and Services category. "Making simulation and data pervasive", "nanoHUB: Democratizing Learning and Research". Award winners: Gerhard Klimeck, Alejandro Strachan, Lynn Zentner, Michael Zentner. https://www.rdworldonline.com/rd-100-2020-winner/nanohub-making-simulation-and-data-pervasive/ https://www.rdworldonline.com/rd-100-winner-of-the-day-nanohub-making-simulation-and-data-pervasive/
- Oct. 2020 Elected Fellow of American Association for the Advancement of Science (AAAS), "For the quantum mechanical modeling theory and simulation tools to design today's nanotransistors and for leadership of the global nanotechnology community as Director of nanoHUB."

  https://www.aaas.org/news/aaas-announces-leading-scientists-elected-2020-fellows
- Dec. 2020, Purdue Bravo Award.
- April 2021, Purdue College of Engineering Faculty Excellence Award for Impact on Industry.
- Dec. 2021, Purdue Bravo Award.

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Research Funding Summary ($116M):

	Total Funding
Total Funding:	**$116,500,000**
Funding generated before Purdue:	$6,071,000
NCN years 1-5: 13.8 NSF +6.9 Purdue =	$20,700,000
NCN years 6-10: 18.241 NSF +7.2 Purdue =	$25,441,000
NCN years 11-15: NSF	$16,500,000
NCN iCHEER (2012-2017) (committed by Purdue):	$5,700,000
NCN suppelement year 15:	$2,000,000
NCN years 16-21: NSF	$13,250,000
NCN_total=	$83,341,000
Cyber Center	$2,500,000
c-PRIMED (2013-2018) (committed by Purdue):	$2,803,458
Total Centers and pre-Purdue	**$94,965,458**
Klimeck controlled research Funding at Purdue	**$21,459,236**
NSF Funding for NCN	**$63,791,000**

RESEARCH PROPOSAL AWARDS (PI OR PRIMARY CONTRIBUTOR)

Research Proposal Awards at JPL

1) 1999, SBIR Phase I Award, ONR, $100k, 6 months, "An Advanced CAD Tool for Quantum Device Simulation", PI: Phillip Stout, CRFDR Corporation, Co-I Gerhard Klimeck (JPL). $100k
2) 12/2001, JPL Directors Research and Discretionary Fund (DRDF), $100k, 18 months, "Nanoelectronic and Nanomagnetic Devices for Revolutionary Computing and Sensor Applications", PI: Gerhard Klimeck, participating: Fabiano Oyafuso (JPL) $200k
3) 03/2002, JPL Internal Research and Development (phase 1), $343k, 6 months, "Evolutionary Computing Technologies for Space Systems", PI: Richard Terrile, Co-PI: Gerhard Klimeck, and others. $543k
4) 10/2002, JPL Internal Research and Development (phase 2), $624k, 12 months, "Evolutionary Computing Technologies for Space Systems", PI: Richard Terrile, Co-PI: Gerhard Klimeck, and others. $1,167k
5) 03/2002, NSA/ARDA, $900k, 3 years, "Nanoelectronic Modeling (NEMO) for High Fidelity Simulation of Solid-State Quantum Computing Gates", PI: Gerhard Klimeck, participating: Fabiano Oyafuso (JPL), Timothy Boykin (U. Alabama Huntsville). $2,067k
6) 07/2002, ONR, $680k, 3 years, "Atomistic 3-D Nanoelectronic Modeling (NEMO) for Electron Transport in Realistic Nano-Scale Devices", PI: Gerhard Klimeck, participating: Fabiano Oyafuso (JPL), Supriyo Datta (Purdue Univ.). $2,747k
7) 10/2002, JPL Internal Research and Development, $624k, 12 months, "Evolutionary Computing Technologies for Space Systems (phase 3)", PI: Richard Terrile, Co-PI: G Klimeck, and others. $3,371k
8) 03/2003, JPL IRTD, $2.7M, 36 months, "Evolutionary Computation Technologies for Space Systems: Revolutionary Tools for Complex Systems", PI: Rich Terrile, Co-PI: Chris Adami, Savio Chau, Ian Ferguson, Wolfgang Fink, Terry Huntsberger, Gerhard Klimeck, Mark Kordon. $6,071k

Research Proposal Awards at Purdue

9) 09/2002, NSF Network for Computational Nanotechnology, $11,300k over 5 years proposed ($13.8M actual + $6.9M cost-share), individual awards listed below on an annual basis, (JPL is government collaborator – no funds exchanged with JPL), PI: Mark Lundstrom (Purdue University). $26,771k
10) 01/2004, NSF Teragrid, friendly user account, 50,000 SUs, "NEMO 3-D on Teragrid", PI: James Bottum, Co- PI: Gerhard Klimeck, Sebastien Goasguen.

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11) 03/2004, IBM SUR Grant, $1.3M, PI: Mark Lundstrom, Co-PIs: Sebastien Goasgien and Gerhard Klimeck, Hardware donation to the NCN for IBM Regatta HPC machine. $28,071k

12) 05/2004, NSF NMI, $3M, 36 months, “NMI Deployment (ENG): nanoHUB”, PI: Sebastien Goasguen, Co-PI: Gerhard Klimeck, Dongyan Xu (Purdue), Alain Roy (U. of Wisconsin), Renato Figueiredo (U. of Florida). $31,071k

13) 06/2004, Semiconductor Research Corporation, $75k, 12 months, "Atomistic Nanoelectronic Modeling (NEMO) for Nano-Scale Wires", NCN industrial Membership, PI: Gerhard Klimeck. $31,146k

14) 07/2004, Intel Equipment Grant, $78k, PI: Gerhard Klimeck, Hardware donation to NCN for In-Vigo computation on nanoHUB. $31,224k

15) 07/2004, NSF NRAC, 200,000 Service Units on Teragrid, "NSF Network for Computational Nanotechnology (NCN) TeraGrid Allocation Proposal", PI: Gerhard Klimeck, Co- PI: George Schatz, Mark Ratner, Susan Sinnott, Renato Figueiredo, Jose Fortes Umberto, Ravaioli, Sebastien Goasguen, Jean Pierre Leburton – no cash value

16) 9/15/04 – 9/14/05, $2,648,333, 1 year, National Science Foundation, “Network for Computational Nanotechnology,” (M.S. Lundstrom, A.H, Sameh, A.Y. Grama, D.S. Ebert, J.F. Pekny, J.R.Bottum, J.Y. Murthy, K. Roy, N..A. Bulger, Gerhard Klimeck, and S. Datta. (already in the total)

17) 04/2005, ARO, $300k, 36 months, "Add on proposal for QCTM-QCCM: The case for NEMO", PI: Robert Clark, Australian Center for Quantum Computing Technologies", Co-PI: G Klimeck. $31,524k

18) 04/2005, ARO, $300, 36 months, "Realistic SiGe Quantum Dot Qubit Design", PI: Mark A. Eriksson, U Wisconsin, Madison, Co-PI: Gerhard Klimeck. $31,824k

19) 9/15/05–9/14/06, $3,148,333, 1 year, National Science Foundation, “Network for Computational Nanotechnology,” (M.S. Lundstrom, A.H. Sameh, A.Y. Grama, D.S. Ebert, J.R.Bottum, J.Y. Murthy, K. Roy, N.A. Bulger, Gerhard Klimeck and S. Datta. (already in total)

20) 10/2005, NIH, $1,461,911 (year 1), $6,476,476 (5 years), Purdue part $89,930 (year 1), $420,518 (5 years) "National Center for Design of Biomimetic Nanoconductors" PI: Erik Jakobson (UIUC), Co-PI at Purdue: Michael McLennan and Gerhard Klimeck – just count the Purdue Portion $32,244k

21) 09/05 – 08/06, $75,000, Intel Corporation, “Membership in the Network for Computational Nanotechnology,” PI's Mark Lundstrom and Gerhard Klimeck. $32,319k

22) 11/05 – 10/06, $75,000, Semiconductor Research Corporation, “Membership in the Network for Computational Nanotechnology,” November 1, 2004 – October 31, 2005, $75,000 $32,394k

23) 10/05-9/08, $2.5M, 3 years, Purdue Discovery Park, "Purdue Cyber Center", PI: Ahmed Emargarmid, Co-PIs:Elisa Bertino, Gary Bertoline, James Bottum, Scott Brandt, Jim Caruthers, Alok Chaturvedi, Ed Coyle, Melissa J. Dark, Jo Davisson, Ahmed K. Elmagarmid, Arif Ghafoor, Chris Hoffmann, Matthew Huber, Reza Kamali, Gerhard Klimeck, Mourad Ouzzani, and Jeffrey S. Vitter $34,894k

24) 10/02/2006-12/31/2008, $480k, Semiconductor research corporation, “Full 3D quantum transport modeling of realistically extended devices”, Gerhard Klimeck, Mark Lundstrom, Cheng-Kok Koh, R. Balakrishnan, Timothy B. Boykin. $35,374k

25) 9/15/06-9/14/07, $3,648,333, 1 year, National Science Foundation, “Network for Computational Nanotechnology,” (M.S. Lundstrom, D.S. Ebert, J.Y. Murthy, K. Roy, G Klimeck and S. Datta)

26) 9/15/06-9/14/07, $100k, 1 year, MARCO/MSD, “Software Customization and Deployment on the nanoHUB”, PI.: Gerhard Klimeck $35,474k

27) 11/1/06–10/31/07, $75,000, 1 year, Semiconductor Research Corporation, “Membership in the Network for Computational Nanotechnology”. $35,549k

28) 11/1/06–10/31/07, $75,000, 1 year, Intel Corporation, “Membership in the Network for Computational Nanotechnology”. $35,624k

29) 4/15/07-4/14/10, $300,000, 3 years, National Science Foundation, “Contact Block Reduction Method for transport in Multimillion Atom Systems”, Dragica Vasileska (PI, Arizona State University), Gerhard Klimeck (Co-PI, Purdue share $135k). $35,924k

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30) 8/20/07-8/19/08, $25,000 (basic full time student funding), Purdue Computing Research Institute (CRI), “Reaching Peta-Scale Computing with a widely known, Purdue-Centered Simulation code in Nanoelectronics for Applications in Solid-state Lighting”, PI: G Klimeck, Co-PI: E Garcia $35,949k

31) 8/20/07-8/19/08, $25,000 (basic full time student funding), Purdue Computing Research Institute (CRI), “Predictive modeling of the atomic level structure and electronic properties of semiconductor nanostructures”, PI: Alejandro Strachan, Co-PI: Gerhard Klimeck $35,974k

32) 9/15/07-9/14/12 National Science Foundation, “Network for Computational Nanotechnology,” (PI’s: M.S. Lundstrom, G Klimeck and Michael McLennan) – total funding $18,241M NSF and $6,9M Purdue cost share. 9/15/07-9/14/08, $3,648,333, year 1. $61,115k

33) 9/15/07-9/14/11, $1,600,000, 4 years, National Science Foundation, “Accelerating Nano-scale Transistor Innovation though Petascale Simulation”, PI: Gerhard Klimeck, Co-PI’s: Thomas Hacker (Purdue), Dongyan Xu (Purdue), Saroj Nayak (RPI). $62,715k

34) 9/15/07-9/14/10, $1,599,205, 3 years, National Science Foundation, “SDCI NMI Improvement: nanoHUB Middleware”, PI: Michael McLennan, Co-PI’s: Gerhard Klimeck, Dongyan Xu. $64,314k

35) 9/15/07-9/14/08, $100k, 1 year, MARCO/MSD, “Software Customization and Deployment on the nanoHUB”, PI.: Gerhard Klimeck $64,414k

36) 11/1/07–10/31/08, $75,000, 1 year, Semiconductor Research Corporation, “Membership in the Network for Computational Nanotechnology”. $64,489k

37) 11/1/07–10/31/08, $75,000, 1 year, Intel Corporation, “Membership in the Network for Computational Nanotechnology”. $64,564k

38) 12/1/07, $20,000, AMD hardware donation to Network for Computational Nanotechnology. $64,584k

39) 4/1/08-3/31/11, $3,100,000, NRI funded center at Notre Dame, MIND – Midwest Institute for Nanoelectronics Discovery. PI. Alan Seabaugh, Lead at Purdue: G. Klimeck, Purdue Portion $910k. Purdue Cost share $360k. Count Purdue funds only. $65,854k

40) 9/15/08-9/14/09, $3,648,333, 1 year, National Science Foundation, “Network for Computational Nanotechnology,” (PI’s: M.S. Lundstrom, Gerhard Klimeck and Michael McLennan), $ amount already counted in the full grant. $65,854k

41) 9/15/08-9/14/09, $100k, 1 year, MARCO/MSD, “Software Customization and Deployment on the nanoHUB”, PI.: Gerhard Klimeck $65,954k

42) 11/1/08–10/31/09, $75,000, 1 year, Semiconductor Research Corporation, “Membership in the Network for Computational Nanotechnology”. $66,029k

43) 11/1/08–10/31/09, $75,000, 1 year, Intel Corporation, “Membership in the Network for Computational Nanotechnology”. $66,104k

44) 10/1/08-9/30/12, $100,000 Klimeck portion, 4 year, Army Research office, subcontract to University of Wisconsin, Madison, “Solid State Quantum Computing using Spin Qubits in Si/SiGe Quantum Dots”, PI: Mark Eriksson, Wisconsin, Co-PI: Gerhard Klimeck. $66,204k

45) 10/1/08-9/30/12, $4,463,000 total, $400,000 Klimeck portion, 4 year, Army Research office, subcontract to University of New South Wasles, “Solid State Quantum Computing in Silicon”, PI: Robert Clark, UNSW, Co-PI: Gerhard Klimeck. $66,604k

46) 12/1/08-11/30/10, $160,000, Sandia National Laboratory, “Nanoelectronic Modeling for Semiconductor Qubits”, PI: Gerhard Klimeck. $66,764k

47) 7/15/08-7/14/11, $657,479.00 , 2 years, National Science Foundation, “A TeraGrid MATLAB Cluster – Exploring New Services for an XD Future”, PI.: David Lifka, Cornell, Co-PIs: Gerhard Klimeck, Michael McLennan, Purdue. Purdue portion of funding $313,715. $67,078k

48) 9/1/09-8/31/11, $1,412,406.53, 2 years, National Science Foundation, “Instant-On Simulation Delivery: Helping TeraGrid Achieve Its Wide and Open Strategic Goals”, PI: Gerhard Klimeck, Co-PIs: George B. Adams III, and Michael J. McLennan. $68,490k

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49) 9/15/09-9/14/10, $3,648,333, 1 year, National Science Foundation, “Network for Computational Nanotechnology,” (PI’s: M.S. Lundstrom, Gerhard Klimeck and Michael McLennan), $ amount already counted in the full grant. $68,490k

50) 11/1/09–10/31/10, $75,000, 1 year, Semiconductor Research Corporation, “Membership in the Network for Computational Nanotechnology”. $68,565k

51) 11/1/09–10/31/10, $75,000, 1 year, Intel Corporation, “Membership in the Network for Computational Nanotechnology”. $68,640k

52) 11/01/09-10/31/10, $693,488, Theory, Modeling, and Simulation of Nanotransistors, Massachusetts Institute of Technology, MSD, FCRP, PI: M. S. Lundstrom, Co-PI: G. Klimeck, A. Strachan, Klimeck Portion: $85,000 $68,725k

53) 06/01/2010-09/30/2011, $16,795, Purdue Research Foundation: Xr Grant Midwest Academy For Nanoelectronics & Architectures Mana, Klimeck Portion: $16,795 $68,742k

54) 06/01/2010-09/30/2011, $16,750, Purdue Research Foundation: Xr Grant Midwest Academy For Nanoelectronics & Architectures Mana, Klimeck Portion: $16,750 $68,759k

55) 09/01/2009-08/31/2011, Src Education Alliance, Src Education Alliance Master's Scholarship Program, $58,435, Klimeck Portion: $58,435 $68,817k

56) 9/15/10-9/14/11, $3,857,333, 1 year, National Science Foundation, “Network for Computational Nanotechnology,” (PI’s: M.S. Lundstrom, Gerhard Klimeck and Michael McLennan).

57) 09/01/2010-08/31/2011, $100,000, 1 year, National Science Foundation, Network for Computational Nanotechnology Education Research Group, PI’s Gerhard Klimeck and Krishna Madhavan, Klimeck Portion: $50,000. $68,867k

58) 05/01/10-12/31/10, $50,000, Lockheed Martin, “Direct mapping from First Principles to Empirical Tight Binding”, PI: Klimeck, Klimeck Portion: $50,000 $68,917k

59) 09/01/2010-08/31/2013, $498,431, National Science Foundation, Iii:Small: Information Recommendation for Online Scientific Communities, PI: Luo Si, Co-PI: Klimeck, Klimeck Portion $150,000. $69,067k

60) 11/1/10–10/31/11, $75,000, 1 year, Semiconductor Research Corporation, “Membership in the Network for Computational Nanotechnology”. $69,142k

61) 11/1/10–10/31/11, $75,000, 1 year, Intel Corporation, “Membership in the Network for Computational Nanotechnology”. $69,217k

62) 11/01/2010-10/31/2012, Massachusetts Institute Of Technology, “Theory, Modeling, And Simulation Of Nanotransistors”, $535,983, PI: Mark Lundstrom, Co-PI: G. Klimeck, A. Strachan, Klimeck Portion: $85,000 $69,302k

63) 01/01/2011-12/31/2011, $150,00, 1 year, Intel Corporation, Topological Insulator Based Field Effect Transistors, PI: Yong Chen, Co-PI Klimeck, Klimeck Portion: $50,000 $69,352k

64) 02/01/2011-01/31/2013. $160,000, 2 years, NRI, University Of Notre Dame Midwest Institute For Nanoelectronics Discovery (MIND), Klimeck Portion: $160,000 $69,512k

65) 9/15/09-9/14/10, $109,000 1 year, National Science Foundation, “Network for Computational Nanotechnology,” Node Expansion to MIT (PI’s: M.S. Lundstrom, Gerhard Klimeck and Michael McLennan). $69,621k

66) 9/15/10-9/14/11, $3,648,333, 1 year, National Science Foundation, “Network for Computational Nanotechnology,” (PI’s: M.S. Lundstrom, Gerhard Klimeck and Michael McLennan). $69,621k

67) 05/01/11-12/31/12, $75,000, Lockheed Martin, “Membership in the Network for Computational Nanotechnology”, PI: Klimeck $69,696k

68) 11/1/11–10/31/12, $30,000, 1 year, Semiconductor Research Corporation, “Membership in the Network for Computational Nanotechnology”, PI: Klimeck $69,726k

69) 11/1/11–10/31/12, $75,000, 1 year, Intel Corporation, “Membership in the Network for Computational Nanotechnology”, PI: Klimeck $69,801k

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70) 11/1/11–10/31/12, $75,000, 1 year, Samsung, “Membership in the Network for Computational Nanotechnology”, PI: Klimeck $69,876k

71) 11/1/11–10/31/12, $75,000, 1 year, Global Foundries, “Membership in the Network for Computational Nanotechnology”, PI: Klimeck $69,951k

72) 1/1/11-12/31/13, $300,000, 3 years, Semiconductor Research Corporation, Custom Research sponsored by Intel, “Advanced Quantum Device Simulation Using NEMO5”, PI: Klimeck $70,251k

73) 5/1/11-4/30/13, $120,000, 2 years, Hamamatsu, Japan, “Design and Modeling of Terahertz Quantum Cascade Lasers”, PI: Klimeck, Co-PI Tillmann Kubis. $70,371k

74) 8/1/11-7/31/15, $40,163, Travel funds for NSF PRAC- Accelerating Nano-Scale Transistor Innovation. PI Klimeck $70,411k

75) 8/1/11-6/30/12, $80,000, ARO, Wyle Lab, “Modeling Current Collapse in GaN HEMTs”, PI Klimeck $70,491k

76) 06/1/11-05/31/14, $121,500, NSF Graduate Research Fellowship for Matthias Yui Hong Tan. $70,613k

77) 5/1/11-4/30/12, $299,982, NSF Supplement to Network for Computational Nanotechnology, manufacturingHUB, PI Klimeck $70,913k

78) 11/1/12-8/31/17, $14,500,000, NCN Reconfigurations $85,413k

79) Purdue: 8/1/12-7/31/17, $5,700,000, iCHEER $91,113k

80) 11/1/12–10/31/13, $75,000, 1 year, Intel Corporation, “Membership in the Network for Computational Nanotechnology”, PI: Klimeck $91,188k

81) 11/1/12–10/31/13, $75,000, 1 year, Samsung, “Membership in the Network for Computational Nanotechnology”, PI: Klimeck $91,263k

82) 11/1/12–10/31/13, $75,000, 1 year, Global Foundries, “Membership in the Network for Computational Nanotechnology”, PI: Klimeck $91,338k

83) 11/1/12-10/31/16, $440,000, 4 years, ARO, subcontract from Univ. of Wisconsin, “Solid State Quantum Computing Using Spin Qubits in Silicon Quantum Dots”, PI: Klimeck $91,778k

84) 2/15/13-12/31/18, $3,559,683.00, 5 years FCRP – LEAST, Notre Dame: Total Proposal: 3,559,683.00 Klimeck Portion of Budget: $639k $92,417k

85) 1/15/13-12/31/18, $3,559,683.00, 5 years FCRP – FAME, UCLA, Purdue Portion: 905,000.00: Klimeck Portion of Budget: $275k $92,692k

86) 1/1/13–12/31/13, $75,000, 1 year, Philips Lumileds, “Membership in the Network for Computational Nanotechnology”, PI: Klimeck $92,767k

87) 12/21/12-12/20/16, $509,992, 4 years, ARO, subcontract from Univ. of New South Wales, “Solid State Quantum Computer in Silicon”, PI: Klimeck $93,277k

88) 06/01/13-05/31/14, $100,000, 1 year, SRC, “Incoherent Scattering in Non-equilibrium Green’s Functions in Realistic III-V Devices”, PI: Klimeck $93,377

89) Purdue: 06/12/13-06/30/2018, $2,803,458.00, 5 years, c-PRIMED $96,180k

90) 07/01/13-06/30/14, $75,000, 1 year, AFRL, subcontract from Alion, “Nanoelectronic Modeling for Sub-Monolayer Quantum Dot Stacks”, PI: Klimeck. $96,255k

91) 10/01/13-09/30/14, $126,000, 1 year, Intel Corporation, “iNEMO Discretionary”, PI: Klimeck $96,381k

92) 11/1/13–10/31/14, $75,000, 1 year, Global Foundries, “Membership in the Network for Computational Nanotechnology”, PI: Klimeck $96,456k

93) 11/1/13–10/31/14, $75,000, 1 year, Intel Corporation, “Membership in the Network for Computational Nanotechnology”, PI: Klimeck $96,531k

94) 1/1/14–12/31/14, $75,000, 1 year, Philips Lumileds, “Membership in the Network for Computational Nanotechnology”, PI: Klimeck $96,606k

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95) 11/1/13–10/31/14, $75,000, 1 year, Samsung, “Membership in the Network for Computational Nanotechnology”, PI: Klimeck $96,681k

96) 11/1/13–10/31/14, $75,000, 1 year, Intel Corporation, “Membership in the Network for Computational Nanotechnology”, PI: Klimeck $96,756k

97) 1/1/14–12/31/14, $75,000, 1 year, TSMC, “Membership in the Network for Computational Nanotechnology”, PI: Klimeck $96,831k

98) 12/1/14–11/30/17, $199,392, 3 years, NSF, “Network for Computational Nanotechnology”, Data Supplement, PI: Klimeck $97,031k

99) 12/1/15–11/30/17, $580,000, 2 years, NSF, “Network for Computational Nanotechnology”, Engineering Observatory Supplement, PI: Klimeck, Total Proposal: $580,000, Klimeck Portion: $275,706 $97,306k

100) 11/1/14-10/31/15, $75,000, 1 year, Intel Corporation, “Membership in the Network for Computational Nanotechnology”, PI: Klimeck $97,381k

101) 1/1/15-12/31/15, $75,000, 1 year, Philips Lumileds, “Membership in the Network for Computational Nanotechnology”, PI: Klimeck $97,456k

102) 1/1/15–12/31/15, $75,000, 1 year, TSMC, “Membership in the Network for Computational Nanotechnology”, PI: Klimeck $97,531k

103) 06/01/14-05/31/15, $100,000, 1 year, SRC, “Incoherent Scattering in Non-equilibrium Green’s Functions in Realistic III-V Devices”, PI: Klimeck $97,631k

104) 9/1/15-8/31/18, $450,000, 3 years, Intel, “NEMO5 Development Plan”, PI: Klimeck $98,081k

105) 10/01/14-09/30/15, $126,000, 1 year, Intel Corporation, “iNEMO Discretionary”, PI: Klimeck $98,207k

106) 9/1/11-8/31/15, $1,280,000, 4 years, NSF, “NEB: Superlattice-FETs, Gamma-L-FETs, and Tunnel-FETs: Materials, Devices and Circuits for Fast Ultra-Lower-Power ICs” University of California – Santa Barbara: Total Proposal: $1,280,000, Povolotskyi/Klimeck portion: $371,410 $98,579k

107) 9/15/15-8/31/18, $240,000, 3 years, NSF, “nm Electron Wave Devices for Low-Power VLSI Electronics”, PI: Povolotskyi, co-PI: Klimeck $98,819k

108) 10/01/15-09/30/16, $126,000, 1 year, Intel Corporation, “iNEMO Discretionary”, PI: Klimeck $99,945k

109) 1/1/16-12/31/16, $75,000, 1 year, Philips Lumileds, “Membership in the Network for Computational Nanotechnology”, PI: Klimeck $99,020k

110) 1/1/16–12/31/16, $75,000, 1 year, TSMC, “Membership in the Network for Computational Nanotechnology”, PI: Klimeck $99,095k

111) 1/1/16-12/31/18, $300,000, 3 years, SRC, “NEMO5: Engineering Band Tails and Band to Band Tunneling in III-V Semiconductors”, PI: Kubis, co-PI: Klimeck $99,395k

112) 9/2016, $27,000, 4 Years, “The Nanotechnology Applications and Career Knowledge (NACK) National Support Center”, PI: Klimeck $99,422k

113) 11/2016, $12,710, 1 year, NSF, “PRAC Travel – atomistic simulations”, PI: Klimeck $99,435k

114) 11/1/16-10/31/17, $75,000, 1 year, Intel Corporation, “Membership in the Network for Computational Nanotechnology”, PI: Klimeck $99,510k

115) 10/01/16-09/30/17, $100,000, 1 year, Intel Corporation, “iNEMO Discretionary”, PI: Klimeck $99,610k

116) 1/1/17-12/31/17, $75,000, 1 year, Philips Lumileds, “Membership in the Network for Computational Nanotechnology”, PI: Klimeck $99,685k

117) 1/1/17–12/31/17, $75,000, 1 year, TSMC, “Membership in the Network for Computational Nanotechnology”, PI: Klimeck $99,760k

118) 8/1/17-12/31/18, $2,000,000, 18 months, NSF, Supplement for Network for Computational Nanotechnology, PI: Klimeck $101,760k

119) 6/1/17-03/01/2018, $100,000, 9 months, NSF, NSF Grantee’s Meeting, PI: Klimeck $101,860k

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120) 11/1/17-10/31/18, $75,000, 1 year, Intel Corporation, “Membership in the Network for Computational Nanotechnology”, PI: Klimeck $101,935k

121) 1/1/18-6/3018, $50,000, 6 months, I-Corps nanoHUB: cyber platform for STEM research, education, and collaboration, PI: Klimeck $101,985k

122) 5/2018-5/2019, $50,000, 1 year, NSF, PARADIM support through nanoHUB, PI Klimeck $102,035k

123) 5/2018-5/2021, $450,000, 3 years, CRANE, “ASSURE”, PI Klimeck $102,485k

124) 1/1/18–12/31/18, paid on 8/2018 , $75,000, 1 year, TSMC, “Membership in the Network for Computational Nanotechnology”, PI: Klimeck $102,560k

125) 11/2018-11/2023, $13,250,000, 5 years, NSF, “Network for Computational Nanotechnology – Cyber Platform” $115,810k

126) 11/1/18-10/31/19, $75,000, 1 year, Intel Corporation, “Membership in the Network for Computational Nanotechnology”, PI: Klimeck $115,885k

127) 1/2019, $15,000, 6 months, MIT Lincoln Labs, “Computational Assessment of Ferroectric FETS for low-power Digital Applications”, $115,900k

128) 9/2019, $300,000, 3 years, NSF, Harvard University, “QII-TAQS: Majorana Nanomanipulation for Topological Quantum Computing” $116,200k

129) 11/1/19-10/31/20, $75,000, 1 year, Intel Corporation, “Membership in the Network for Computational Nanotechnology”, PI: Klimeck $116,275k

130) 11/1/20-10/31/21, $75,000, 1 year, Intel Corporation, “Membership in the Network for Computational Nanotechnology”, PI: Klimeck $116,350k

131) 11/1/21-10/31/22, $75,000, 1 year, Intel Corporation, “Membership in the Network for Computational Nanotechnology”, PI: Klimeck $116,425k

132) 11/1/22-10/31/23, $75,000, 1 year, Intel Corporation, “Membership in the Network for Computational Nanotechnology”, PI: Klimeck $116,500k

RESEARCH PROPOSAL AWARDS (PERIPHERIAL CONTRIBUTOR)

1) 07/2002, SRC, $468k, 3 years, (JPL collaborator only - no funds exchanged with JPL), "Study of Mobility Degradation and Detailed Structure of Si/high-k Interfaces including Dopant Segregation Using AIDA-TEM (Ab-initio Interface Defect detection by Analytic Transmission Electron Microscopy)", PI: Wolfgang Windl (Ohio State U), Co-PIs: Gerd Duscher (North Carolina State U), Maria Merlyne De Souza (De Montfort U).

2) 04/2003, JPL Internal R&TD, $30k, 3 months, "Simulation of hydrogen sensors with Pd nanowires", PI: Paul von Allmen, Co-I: Seungwon Lee and Gerhard Klimeck.

3) 03/2003, JPL IRTD, $2.185M, 36 months, "Computational Architecture and Coupled Modeling Environment for Solid Earth Science", PI: Ronald Blom, Co-PI: William Bosl (Architecture), Eric DeJong (Scientific Visualization), Erik Ivins (Gravity, Model codes), Jeffrey Jewell (Gravity modeling), Dan Katz (Process flow) Gerhard Klimeck 3816 (Parallel cluster computing), Carol Raymond (Joint Gravity/Magnetics), Paul Rosen (InSAR), Mike Watkins (GRACE/GRACE Follow-on), Frank Webb 335 (GPS earthquake predef modeling), Xiaoping Wu (Gravity Inversion).

4) 03/2003, JPL IRTD, $450k, 36 months, "Evolving Spintronic Circuits for Fast, Low-Power, Radiation Tolerant Hardware", PI: Colin Williams, Co-PI: Gerhard Klimeck, Farrokh Vatan, Amir Fijany.

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SERVICE – EDITORIAL AND CONFERENCE ROLES

Journal Editor

- Editorial Board, Nature Computational Materials, Nature Publishing Group, Nov 2016-August 2018
- Editorial Board, Journal of Computational Electronics, Springer Verlag, Editors David Ferry, Karl Hess (until 2015), Massimo Fischetti editor since 2015, 2010-November 2019
- Editorial Board, Nanoscale Systems:Mathematical Modeling Theory and Applications, Open Access Journal, Versita.com. Editor Roderick Melnick, 2012-present

Special Issues Editor

- Proceedings of the 10th International Workshop on Computational Electronics, Journal of Computational Electronics, Springer, ISSN 1569-8025 (Print) 1572-8137 (Online), IssueVolume 3, Numbers 3-4 / October, 2004
- Extending Moore's Law with Advanced Channel Materials, edited by S. Chakravarthi, R. Arghavani, G. Klimeck (Mater. Res. Soc. Symp. Proc. Volume 995E, Warrendale, PA, 2007).
- Guest Editor: Journal of Computational Electrionics, from 14th International Workshop for Computational Electronics, Oct. 24-27, 3004. Springer Verlag, 2005.
- Guest Editor, Proceedings of the International Workshop for Computational Electronics, Sep. 2-4, 2015, Purdue University.

Program Committee, Conference Preparation, Conference / Session Chair

1. Program Committee, 27th international Symposium on Compound Semiconductors (ISCS), IEEE, (2000), Monterey, CA, Oct 2-5, 2000.
2. Session Moderator, Quantum Transport, Advanced Research Workshop on Quantum Transport in Semiconductors, Maratea, Italy, June 17-22, 2001.
3. Program Committee, Session Chair, Nanoelectronics Session, Nanospace 2002, Galveston, TX, June 24-28, 2002.
4. Session Chair, Superlattices and Resonant Tunneling Structures, March Meeting of American Physical Society, March 16-21, Austin, TX (2003).
5. Program Committee, 2nd International Workshop on Quantum Dots for Quantum Computing and Classical Size Effect Circuits, University of Notre Dame, August 7-9, 2003.
6. Session Chair, Computational Approaches Toward the Electronic Properties of Quantum Dots Workshop, Chicago, September 22-24, 2003, sponsored by DARPA.
7. Session Chair, "Advanced MOS Devices", 14th Workshop on Modelling and Simulation of Electron Devices, Barcelona, Spain. October 16-17 2003.
8. Program Committee, IEEE Nano 2004, Munich, Germany, August 16-19, 2004.
9. Session Chair, IEEE Nano 2004, Session Nanoelectronics 1, Munich, Germany, August 16-19, 2004.
10. Conference Chair, International Workshop for Computational Electronics, Purdue University, October 24-27, 2004.
11. Program Committee, 15th Workshop on Modelling and Simulation of Electron Devices (MSED) 4-5 July 2005, Pisa, Italy.
12. Program Committee, 14th International Conference on Nonequilibrium Carrier Dynamics in Semiconductors (HCIS-14), Chicago, Illinois, July 24-29, 2005.
13. Program Committee, IEEE Nano 2005, Nagoya, Japan, August 11-15, 2005.
14. IEEE IEDM Modeling and Simulation Program and Selection Committee, Vancouver, Canada, August 1st, 2005.

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15. Supercomputing 2005, Session chair, Education Program to Middle School and High School Teachers, Introduction to the Integration of High Performance Computing: Nanotechnology. Physics, Chemistry, Chemical Engineering, Nov 12-18, 2005, Seattle, WA.
16. Program committee: HPCNano2005 (IEEE/ACM International Workshop on High Performance Computing for Nano-science and Technology), Supercomputing 2005, Nov 12-18, 2005, Seattle, WA.
17. Session Chair, IEEE IEDM Modeling and Simulation, Nanowires, Washington DC, Dec. 6th, 2005
18. International Advisory Board, IEEE International Workshop for Computational Electronics, Technical University Vienna, May 25-27, 2006.
19. "nanoHUB - a community website for online simulation and more", Short Course at IEEE-NMDC, IEEE Nanotechnology Materials and Devices Conference, October 22-25, 2006, www.ieee-nmdc.org
20. Program committee: HPCNano2006 (IEEE/ACM International Workshop on High Performance Computing for Nano-science and Technology), Supercomputing 2006, Nov 12-17, 2006, Tampa, FL.
21. "nanoHUB tutorial - overview, usage scenarios, vision", The 2nd Annual IEEE International Conference on Nano/Micro Engineered and Molecular Systems (IEEE NEMs) Jan 16-19, 2007, Bangkok Thailand.
22. Program Committee, MRS 2007 Spring Meeting, Session G, Extending Moore's Law with Advanced Channel Materials.
23. Session chair (2 sessions), MRS 2007 Spring Meeting, San Francisco, CA, April 10, 2007, Advanced Channel Materials I: (110) Si, Ge, Advanced Channel Materials II
24. NSF workshop organizer, jointly with Prof. Jonathan Dowling (LSU) and Paul Werbos (NSF), Quantum, Molecular and High Performance Modeling and Simulation for Devices and Systems (QMHP), April 16, 17, 2007
25. International Advisory Board, IEEE International Workshop for Computational Electronics, University of Mass Amherst, Oct. 8-10, 2007.
26. Workshop Co-Chair: HPCNano2007, Nov. 16, 2007 (IEEE/ACM International Workshop on High Performance Computing for Nano-science and Technology), Supercomputing 2007, Reno, NV.
27. Session Chair - "nanoHUB tutorial", IEEE Nano conference, Arlington, TX, August 18, 2008.
28. Workshop Advisory Committee: HPCNano2008, Nov. 21, 2008 (IEEE/ACM International Workshop on High Performance Computing for Nano-science and Technology), Supercomputing 2008, Austin TX.
29. International Advisory Board, IEEE International Workshop for Computational Electronics, Tsinghua University, Beijing, China, May 27-29, 2009.
30. Workshop Advisory Committee: HPCNano2009, Nov. 15, 2009 (IEEE/ACM International Workshop on High Performance Computing for Nano-science and Technology), Supercomputing 2009, Portland OR.
31. International Advisory Board, IEEE International Workshop for Computational Electronics, University of Pisa, Italy, Oct. 27-29, 2010.
32. General Chair National Science Foundation Nano Grantees Conference, Arlington VA, Dec. 6-8, 2010.
33. IEEE Nanotechnology Materials and Devices Conference (NMDC) 2011, Jeju Island, South Korea, Oct 18-21, Session Chair, Characterization and Simulation of Nanomaterials and Nanostructures.
34. Member of the program committee (PC) for the IEEE International Parallel and Distributed Processing (IPDPS), May 21 - May 25, 2012 in Shanghai, China. Technical committee member, Symposium IEEE International Parallel and Distributed Processing (IPDPS 2012) in the area of applications. Formalized paper evaluation. Oct-Nov. 2011
35. International Advisory Board, IEEE International Workshop for Computational Electronics, University of Wisconsin, May 22-25, 2012.

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36. International Advisory Board, IEEE International Workshop for Computational Electronics, Nara, Japan, June. 4-7, 2013.
37. General Chair of nanoHUB user conference, Arizona State University, April 9-11, 2014
38. International Advisory Board, IEEE International Workshop for Computational Electronics, Paris, France, Sept. 9-11, 2014.
39. General Chair of nanoHUB user conference, Purdue University, August 31-Sept 1st. 2015
40. General Chair of International Conference for Computational Electronics (IWCE), Purdue University, Sept 2-4, 2015
41. International Advisory Committee of International Conference for Computational Nanotechnology (IWCE), Leeds, UK, June 5-9, 2017
42. General Chair National Science Foundation Nano Grantees Conference, Arlington VA, Dec. 12-13, 2017
43. International Advisory Committee of 2018 IEEE Nanotechnology Materials and Devices Conference (NMDC), Portland OR, Oct. 14-17, 2018.
44. International Advisory Committee of International Conference for Computational Nanotechnology, Evanston, IL, May 2019
45. International Advisory Committee of 2019 IEEE Nanotechnology Materials and Devices Conference (NMDC), Stockholm, Sweden, Oct. 27-30, 2019.
46. Leading Member of Steering Committee, NSF-directed effort: "Summit on Big Data and Cyberinfrastructure in Materials Research", Planned and executed multiple meetings that culminated in the summit attended by ~100 researchers at the Big 10 center in Chicago in Nov. 21-22, 2019.
47. Gerhard Klimeck, "The nanoHUB Platform", 2021 NNI Strategic Planning Stakeholder Workshop, January 11-13, 2021, National Nanotechnology Coordination Office
48. Gerhard Klimeck, "The nanoHUB Platform", NITRD Big Data Interagency Virtual Workshop on Pioneering the Future of Federally Supported Data Repositories Wednesday Jan 13th - Friday Jan 15th, 2021 https://www.orau.gov/bdworkshop21
49. International Advisory Committee of International Conference for Computational Nanotechnology (IWCN), Seoul Korea, May, 2021
50. Session Chair, SiNano Summer School, July 12-16, 2022, Glasgow, UK
51. Session Chair, International Conference on Simulation of Semiconductor Processes and Devices (SISPAD), Sept. 5-9, 2022, Granada, Spain

SERVICE – REVIEW PANELS, ADVISORY BOARDS, COMMITTEES

National Review Panel Service

- National Academy of Sciences, National Nanotechnology Initiative (NNI) Triennial Review Committee Member. Jan. 2015 – Sept 2016, Report published at: https://www.nap.edu/catalog/23603/triennial-review-of-the-national-nanotechnology-initiative
- IEEE NTC (Nanotechnology Council) Fellow Evaluation Committee Member. Starting August 2021 to present.

External Review Panel Service

1. National Science Foundation, Jan 13-14, 2005, Review panel on Electronic Devices, Washington DC.
2. National Science Foundation, Oct 31-Nov 1, 2006, Review panel on Electronic Devices, Washington DC.
3. National Science Foundation, Feb 28-March 1, 2012, Nano Engineering Research Center, Los Angeles.

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4. National Science Foundation, Sept 23-24, 2013, EPSCOR center review, Washington DC
5. National Science Foundation, Oct. 14, 2015, Review Panel on Personalized & Low –Cost Manufacturing
6. National Science Foundation, Nov. 5-6, 2015, Software Institutes Implementation Proposals in Chemistry and Materials Research
7. Site visit reviewer, Trinity College Dublin, Ireland, "Atom Level Engineering of Material-on-Insulator Devices and Sensors", January 21-22, 2016
8. PhD Candidate Examiner / Opponent, Lund University Sweden, May 13, 2016
9. National Science Foundation, July 13, 2017, Review Panelist
10. Florida Center for Cybersecurity, Nov. 2018, External Reviewer
11. National Science Foundation, Feb. 22, 2019, Review Panelist
12. PhD Candidate Examiner, March 2019, PDPM-IIITDM Jabalpur, India
13. US Department of Energy – Proposal reviewer, Jan 2020.
14. European Research Council (ERC) – External reviewer for ERC 2020 Starting, Consolidator, Advanced and Synergy Grant Calls. Jan. 2021
15. National Science Foundation, June 28-29, 2021, Review Panelist
16. National Science Foundation, June 22-24, 2022, Review Panelist
17. National Science Foundation, Feb. 24, 2023, Review Panelist

US Nationwide Advisory Board Service

- Scientific Expert recruited by UChicago Argonne LLC for the sponsored review of Argonne National Laboratory's Computing, Environment and Life Sciences Directorate (CELS) scheduled for September 9-11, 2014.
- Triennial Review of the National Nanotechnology Initiative (NNI), Committee Member, Focal Point Infrastructure and Management, Federally mandated review for an annual budget of the National Nano Research of about $2B. January 2015-Feb. 2016

International Advisory Board Service

1. Advisory Board Meeting, "Meeting the Materials Challenges of nano-CMOS Electronics", University College London, Oct. 22, 2007, Hosts Alex Shluger, University College London and Asen Asenov, University of Glasgow.
2. Advisory Board Meeting, "NanoCMOS – e-Science - EPSRC", Oct 24, 2007, Host Asen Asenov, University of Glasgow.
3. Advisory Board Meeting, "NanoCMOS – e-Science - EPSRC", Nov. 12, 2008, Host Asen Asenov, University of Southhampton.
4. Advisory Board Meeting, "NanoCMOS – e-Science - EPSRC", Nov. 14, 2009, Host Asen Asenov, University of York.
5. KIM Governance Committee, "KIM – Knowledgebase of Interatomic Models", Workshop, San Diego, Feb. 26-27, 2011
6. Advisory Board Meeting, "NanoCMOS – e-Science - EPSRC", March 23, 2011, Host Asen Asenov, University of Southhampton.
7. Advisory Board ARCHIE-WeSt High Performance Computer Centre, Glasgow, funded by EPRSC, Meeting Nov. 27, 2012.
8. Scientific Advisory Board Invitee (declined attendance due to family health issues), NanoLund, Lund University Sweden, Oct 19-21, 2015

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9. Scientific Advisory Board Mediterranean Excellence in Computing and Ontology, Point of Contact: Prof. Veljko Milutinovic, April 2017 – present.

National Advisory Board Service

1. Advisory Board Meeting, NCRR Resource for Macromolecular Modelling and Bioinformatics, May 16, 2005, Chicago IL, PI.: Prof. Klaus Schulten, U Illinois Urbana-Champaign.
2. Advisory Board Meeting, NSF NMI project, "nanoHUB Deployment", West Lafayette, IN 47907, PI: Sebastien Goasguen, Oct 2004-2007.
3. Non-voting Ex-Officio AdCom member of the IEEE EDS Compact Modeling Committee.
4. CUAC - Cyberindrastructure and User Advisory Comittee of the NSF Teragrid, June 2006 - present, PI.: Charlie Catlett, Formal meetings at TG 06 conference in Indianapolis, June 2006, TG 07 conference in Madison, June 2007.
5. Teragrid governance planning board, June 2007 – April 2008
6. NSF Future of TeraGrid working Group, October 2007 – April 2008.
7. Oak Ridge Leadership Facility (OLCF) User council, Advise OLCF on operational and user aspects, meets throughout the year in confernce calls, Aug. 2009-present,
8. KIM Governance Committee, “KIM – Knowledgebase of Interatomic Models”, Workshop, San Diego, Feb. 26-27, 2011

Industrial Committee Service

- SRC Multi-Scale Modeling Working Group, Feb. 2004 – Fall 08.
- ITRD – ERM (Emerging Research Materials) working group, July 2004 – Fall 08.
- ITRS (International Technology Roadmap For Semiconductors) - PIDS (Process Integration, Devices & Structures) working group, July 2011 – present, Transition the roadmap device modeling from non-physical lumped device models to physics-based well defined transport models. Direct impact of NEMO on global roadmap.

Local Committee Service

- JPL Supercomputing Steering Committee, Sept. 2003-Dec 2003.
- Purdue Computing Research Institute (CRI) Steering Committee, Jan 2004-Aug 2006.
- Purdue Engineering Computing Network (ECN) Director Search Committee, Dec. 2003-Feb. 2004.
- Purdue Engineering Teaching Awards Committee, Jan. 2005-Jan 2007.
- Intel Alumni Meeting co-organizer, spring 2004.
- Birck Nanotechnology Center Internal Advisory Committee (spring 2007 – 2012)
- ECE Wang Hall Building Planning Committee member (2008-09) (Original plan for discovery park)
- Co-Chair Predictive Science Cluster Hire with Prof. Alejandro Strachan (2014-2015)
- Advisory Board Member: GLASS-Net let by Prof. Thomas Hertel, Purdue (2021-present)

Journal Reviewer / Referee

- Physical Review B
- Applied Physics Letters, Journal of Applied Physics
- physica status solidi b
- Superlattices and Microstructures

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- IEEE Transactions on Electron Devices, IEEE Transactions on Nanotechnology
- Journal for Computational Electronics
- Nature Nanotechnology

SERVICE - FOREIGN EXCHANGE PROGRAM

- Organizer of Bochum-Purdue student exchange program. Jan 2004-present. This Program exists since 1979, originally under the leadership of Prof. Fritz Friedlaender (Purdue) and Eckard Kneller (Bochum). It is now lead from Bochum by Prof. Ulrich Kunze.
  - AY04/05 students (3/3): Tillmann Falk, Jannik Emde, Ralf Georg Hetmanczyk
  - AY05/06 students (4/7): Monica Siepmann, Markus Kasper, Hayg Dabag, Winfried Schüngel
  - AY06/07 students 3/10): Lars Wolleschensky, Martin Schiffner, Martin Oettmeier
  - AY07/08 students (3/13): Gesine Hinterwälder, Lukas Lohaus, Oliver Mischke
  - AY08/09 students (3/16): Michael Szelong, Matthias (Yui-Hong) Tan, Martin Beckmann
  - AY09/10 students (3+1/19) : Matthias (Yui-Hong) Tan, Patrick Wesskamp, Jan Trieschmann, Cornel Reuber
  - AY10/11 students (3+1/22): Matthias (Yui-Hong) Tan, Melanie Schmidt, Hendrik Vogt, Richard Ronig
  - AY11/12 students (3/25): Vadim Barkov, Markus Bienholz, Christian Tendyck
  - AY12/13 students (3/28): Johnny Chor, Fabian Just, Dennis Michaelis
  - AY13/14 students (3/31): Lukas Bernhard, Thomas Busch, Frederik Schmidt
  - AY14/15 students (3/34/: Thilo Balke, Steffen Becker, Dominik Preikschat
  - AY15/16 students (3/37): Tim Wingender, Jacek Rzeniewicz, Jan Kaiser

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MENTOR / ADVISOR

Current advisor to 10 undergraduate students, 4 graduate students, 1 post-doc
Current Post-doc advisor to 1 individual

- Jinying Jessica Wang (Aug. 2018 – present)

Current (year 2022 and AY 22/23) Ph.D. student advisor to 4 individuals

1. Xinchen Guo – defended successfully, thesis to be submitted Dec. 2022 (Aug. 2015 – Dec. 2022)
2. Han-Wei Hsiao (left research group – Kubis) (Aug. 2019 – Aug. 2022)
3. Hong-Yang Lin (Aug. 2021 – present)
4. Dain Kang (Aug. 2022 - present)

Current Master Student advisor to 0 individuals

1.

Current (year 2022 and AY 22/23) Undergraduate Research Student advisor to 12 individuals

1. Darin Tsai (VIP program) (Aug 2021 – Aug. 2022)
2. Alan Zhang (VIP program) (Aug 2021 – May 2022)
3. Aloysius Rebeiro (VIP program) (Aug 2021 – May 2022)
4. Maximilian Drach (VIP program) (Aug 2021 – present)
5. Dheeraj Kumar (VIP program, summer) (Jan 2022 – present)
6. Zachary Hunter (summer) (May 2022 - present)
7. Maximilian Drach (VIP program, summer) (Aug. 2021 - present)
8. Aneesh Chakravarthula (VIP fall, continued independent) (Aug. 2022 - present)
9. Jonathan Kao (VIP fall) (Aug. 2022 - Dec. 2022)
10. Samy Rajaraman (VIP Fall) (Aug. 2022 - Dec. 2022)
11. Kihunn Anderson (VIP Spring) (Jan. 2023 - present)
12. Lakshay Goel (VIP Spring) (Jan. 2023 - present)
13. Roosh Parikh (Jan. 2023 - present)

PAST MENTORSHIPS

Graduated 43 Ph.D. students

1) Anisur Rahman, Co-advisor with Mark Lundstrom (Dec 2003-Aug 2005)
   Exploring New Channel Materials for Nanoscale CMOS Devices: A Simulation Approach
2) Ahmed Ali Yanik (Physics), Co-advisor with S Datta and R Reifenberger (Dec 2003-Aug. 2007)
   Spin Dependent Electron Transport in Nanostructures
3) Neophytos Neophytou, Co-Advisor with Mark Lundstrom (Aug. 2005 – Aug. 2008)
   Quantum and Atomistic Effects in Nanoelectronic Transport Devices
4) Rajib Rahman, Co-advisor with Lloyd Hollenberg (Dec 2005-March 2009)
   Stark Tuning of the Electronic Porperties of Impurities for Quantum Computing Applications
5) Neerav Kharche, Co-advisor Timothy Boykin (Jan 2005-Jan 2010)
   Atomistic Modeling of Electronic Structure and Transport in Disordered Nanostructures
6) Muhammad Usman, (Aug. 2005 – Aug. 2010)
   Multi-million Atom Electronic Structure Calculations for Quantum Dots
7) Samarth Agarwal (Physics), Co-advisor with Ron Reifenberger (June 2004 – Dec. 2010)
   Design Guidelines for High Efficiency Photovoltaics and Low Power Transistors using Quantum Transport
8) Amritanshu Palaria, Co-advisor with Alejandro Strachan (Aug. 2005 – Dec. 2010)
   Multi-Scale Predictive Modeling of Nano-Material and Realistic Devices
9) Hoon Ryu, (July 2006 – Aug. 2011)
   Electronic Structure and Quantum Transport in Controlled Impurity Systems (Aug. 2008 – Aug. 2011)

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10) Abhijeet Paul (Aug. 2006 – Oct. 2011)
Computational modeling and simulation study of
electronic and thermal properties of semiconductor nanostructures
11) Sunhee Lee (Aug. 2006 – Nov. 2011)
Development of a Massively Parallel Nanoelectronic Modeling Tool
and its Application to Quantum Computing Devices
12) Ganesh Hegde (May 2010 – Nov. 2013)
Modeling the atomic and electronic structure of Meta-Metal,
Metal-Semiconductor and III-V/Oxide interfaces
13) Sung Geun Kim (Aug. 2007 – Nov. 2013)
Electron Scattering in Quasi-one Dimensional Nanoscale Transistors
14) Saumitra Mehrotra (Aug. 2007 – Jan 2014)
Physics and Simulation Study of Nanoscale Electronic Devices
15) Parijat Sengupta (Aug. 2008 – Jan 2014)
Theory of Topological Insulators and its Applications
16) Sung Hyon Park (Jan. 2010 – Jul 2014)
Advanced III-V / Si Nano-scale Transistors and Contacts: Modeling and Analysis
17) Mehdi Salmani Jelodar (Jan. 2009 – Dec. 2014)
Scaling Issues and Solutions in Ultra Scaled MOSFETs using Predictive Modeling
18) Yui-Hong Matthias Tan (Dec. 2010 – Sept. 2015)
Development of Hybrid Atomistic / Empirical Modeling Methods
for Donor-Based Quantum Computing
19) Yu He (Aug. 2010 – Nov. 2015)
Advanced Boundary Condition Method in Quantum Transport and its Application in Nanodevices
20) Zhengping Jiang (May 2011 – Nov. 2015)
Multi-Scale Simulations for High Efficiency Low Power Nanoelectronics Devices
21) Yaohua Tan (Aug. 2008 – Nov. 2015)
Mapping from *ab*-initio to Tight-Binding and its Applications.
22) Hesameddin Ilatikhameneh (Aug. 2011 – July 2016)
Steep Sub-threshold Swing Transistors
23) Kai Miao (Aug. 2010 – Feb. 2017)
"Quantum Thermal Transport in Semiconductor Nanostructure with Diffusion"
24) Fan Chen (physics) (Oct. 2012 – Feb. 2017)
"Low Power Transistors and Quantum Physics Based On Low Dimensional Materials"
25) Yu Wang (July 2015 – March 2017)
"Design and Optimization of Donor-Based Spin Qubits in Silicon"
26) Archana Tankasala (Aug. 2012 – July 2017)
"Engineering Multi-Electron Interactions for Quantum Logic in Silicon"
27) Junzhe Geng (Aug. 2012 – July 2017)
"Multi-Scale Quantum Transport Modeling of Light Emitting Diodes"
28) Yu-Ling Hsueh (Aug. 2011 – Oct. 2017)
"Electron Spin Relaxation of Donors in Silicon Nanoelectronic Devices
29) Pengyu Long (May 2015 – Nov. 2017)
"Engineering steep transistors towards ultra low supply voltage
30) Tarek Ameen (Aug. 2013 – Feb. 2018)
"Experimentally Validated Quantum Transport Models for Tunneling Devices based on novel Materials"
31) Daniel Mejia (May 2011 – May 2018)
"Visual Analytics to Support Atomistic Simulations Design"
32) Daniel Valencia (Aug. 2012 – June 2018)
"Modeling Electronic Transport in Metal Interconnects"
33) Rifat Ferdous (Jan 2013 – July 2018)
"Spin-Orbit Interaction and Electron Spin Qubits in Silicon Qantum Dots"
34) Harshad Sahasrabudhe (physics) (June 2013 – July 2018)
"Low Temperature Simulations Framework for Quantum Dots and Point Contacts"

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35) Prasad Sarangapani (Aug. 2013 - Sept. 2018)
"Quantitative Prediction of Non-Local Material and Transport Properties Through Quantum Scattering Models"
36) James Charles (July 2016 - Sept 2018)
"Modeling Non-Locality in Quantum Systems"
37) Gustavo A. Valencia-Zapata (Jan. 2015 - Aug. 2019)
"Probabilistic Diagnostic Model For Handling Calssifier Degredation in Machine Leanring"
38) Chin-Yi Chen (Aug. 2014 - Oct. 2019)
"The promising candidate for low power computation: tunneling FETs"
39) Xinchen Guo (Aug. 2015 - Oct. 2019)
"General Resource Management for Computationally Demanding Scientific Software"
40) Kuang-Chung Wang (Aug. 2014 - Oct. 2019)
"Method Development in the NEGF Framework for Nano-Device Simulation: Ab-Initio Tight-Binding and Multi-Particle Intaeration with Büttiker Probe"
41) Yuanchen Chu (Jan 2014 - Nov. 2019)
"PredictiveElectro and Themal Quantum Transport in Nanoscale Devices"
42) Daniel Lemus (Aug. 2012 - April 2020)
"Low-rank Approximations in Quantum Transport Simulations"
43) Timothy Wolfe (Jan. 2018 – Aug. 2021)
„Electronic and Optical Properties of First-Row Transistion Metals in 4H-SiC For Photoconductive Switching"

Graduated 16 Master students

1) Rajib Rahman (non-thesis MS, continued on PhD.) (Aug. 2004-Dec. 2005)
2) Kaushik Balamukundan, (first Job at Intel Corp.) (Aug. 2006 – Aug. 2008)
Carrier Transport in Ultra-Scaled Devices
3) Alissa Nedossekina, Feb. 2009, "Evaluating the Effectiveness of a Virtual Economy System Within an Advanced Scientific Cyberinfrastructure"
4) Sung Hyon Park (continued for PhD) (Aug. 2007 – Dec. 2009)
Hyperfine Mapping of Donor Wave Function Deformations in Silicon Phosphorous Based Quantum Devices
5) Ganesh Hegde (continued for PhD) (Aug. 2007 – May 2010)
Generation and Optimization of Tight Binding Parameters Using Genetic Algorithms and Their Validation Using NEMO-3D
6) Xufeng Wang, co-advised with M. Lundstrom (continued for PhD Lundstrom)(Aug. 2008 – May 2010)
nanoMOS 4.0: A tool to explore ultimate Si transistors and beyond.
7) Yui-Hong Matthias Tan, Exchange Ruhr-University Bochum, (cont. for PhD) (Aug. 2009 – Dec. 2010)
Atomistic Modeling of an experimental GaAs/InGaAs Qantum Dot Molecule using NEMO-3D
8) Zhengping Jiang (continued for PhD) (Aug. 2008 – May 2011)
Quantum Transport in RTD and Atomistic Modeling of Nanostructures
9) Woo-Suhl Cho (transferred to other Purdue research group) (Aug. 2008 – Aug. 2011)
Investigation of Homo-junction InGaAs Band-to-Band Tunneling Diodes
10) Arun Goud Akkala (transferred to K. Roy) (June 2010 – Dec. 2011)
NEGF Simulation of Electron Transport in Resonant Tunneling and Resonant Interband Tunneling Diodes
11) Junzhe Geng (continued on PhD) (June 2010 – Aug. 2012)
Atomistic Modeling of Graphene Nanostructures and Single Electron Quantum Dots
12) Pengyu Long (continued on PhD) (Aug. 2012 – May 2015)
Design and Simulation of Two-dimensional Superlattice Steep Transistors
13) Yu Wang (continued on PhD) (Aug. 2012 – July 2015)
Manipulating and Characterizing Spin Qubits based on Donors in Silicon with Electromagnetic Fields

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14) James Charles (continued on PhD) (May 2013 – July 2016)
Efficient Inelastic Scattering in Atomistic Tight Binding
15) Evan Wilson (terminal M.S. non-thesis) (Aug. 2012 – May 2018)
16) Samik Mukherjee (terminal M.S. non-thesis) (June. 2012 – Dec. 2018)

Past Advisor to 41 Undergrads, 6 Research Faculty, 16 Post-Docs, 1 Research Scientist

Past Research Faculty Mentor to 6 individuals

1) Prof. Mathieu Luisier (Feb. 2008 –Aug. 2011)
2) Prof. Hong-Hyon Park (July 2011 – Nov. 2011)
3) Prof. Jean Michel Sellier (Nov. 2011 – Oct. 2012)
4) Prof. Tillmann Kubis (July 2011 – Nov. 2016)
5) Prof. Michael Povolotskyi (Sept. 2009 – May 2017)
6) Prof. Rajib Rahman (Oct. 2012 – May 2017)

Past Post-doc advisor to 16 individuals

1) Dr. Olga Lazarenkova (at NASA/JPL) (Feb 2002-Jan 2004)
2) Dr. Marek Korkusinski (July 2004-June 2005)
3) Dr. Marta Prada (Jan 2006 – Sept. 2006)
4) Dr. Clemens Heitzinger (Aug. 2005 - Dec. 2006)
5) Dr. Shaikh Ahmed (Feb. 2005-Aug. 2007)
6) Dr. Ben Haley (Nov. 2006 – Jan. 2010)
7) Dr. Jean Michel Sellier (Nov. 2008 – May 2010)
8) Dr. Hong-Hyon Park (July 2009 – July 2011)
9) Dr. Tillmann Kubis (Feb. 2010 – July 2011)
10) Dr. Sebastian Steiger (Jan. 2010 – Aug 2011)
11) Dr. Denis Areshkin (June 2010 – Oct 2011)
12) Dr. James Fonseca (July 2011 – Aug. 2012)
13) Dr. Arvind Ajoy (Sept. 2012 – June 2013)
14) Dr. Bozidar Novakovic (Aug. 2012 – June 2017)
15) Dr. Jun Huang (Nov. 2013 – Aug. 2017)
16) Dr. Namita Narendra (Aug. 2018 – May. 2021)

Past Research Scientist Supervisor to 1 individual

1) Dr. James Fonseca (Aug. 2012 – May 2017)

Past Undergraduate Research Student advisor to 60 individuals

1) Aaron Christensen June - Aug 04
2) Adrian Rios June - Aug 04
3) Patrick Macnamara June - Aug 04
4) Laurie St. Ange June - Aug 04
5) Muriel Fort June - Aug 04
6) Sameer Hamdan June - Aug 04
7) Akira Matsudaira (June 2005-Jan 2006)
8) Katie Ikuku Kitamura (June 2005-Dec 2005)
9) Matteo Mannino (May 2005-May 2006), (Jan 2007 – June 2007)
10) Anish Dhanekula (June 2006 – Jan 2007)
11) Xufeng Wang (June 2006 – Aug. 2008)
12) Sriraman Damodaran (Sept 2006 – Dec. 2007)
13) Amanda Weitzel (Sept 2006 – May 2007)
14) Thomas Andrews May 08-Aug 08
15) Drew Schuster May 08-Aug 08
16) Gloria Budiman May 08-Aug 08, May 09-Aug. 09
17) Mario Salomon May 08-Aug 08

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18) Naman Chopra (Nov. 2008 – Aug. 09)
19) Gloria Budiman May 09-Aug 09
20) Matthias Tan (Aug. 2008 – May 09)
21) Junzhe Geng May 09-Aug 09
22) Victoria Savikhin May 09-Aug 09
23) Abhinav Sinha <abhinavsinha@iitb.ac.in>, May-Aug. 2010
24) Matthew Buresh <mjburesh@asu.edu>, May-Aug. 2010
25) Lars Bjaalie <bjaalie1@illinois.edu>, May-Aug. 2010
26) Siqi Wang <wang340@purdue.edu>, May-Aug. 2010
27) Muhammad Zulkifli <mzulkifl@purdue.edu>, May-Aug. 2010
28) Krystal Hoganson <khoganson@miners.utep.edu> May-Aug. 2010
29) Win Than Aung Dec. 2008 – May 2011
30) Siqi Wang, May 2010 – Dec. 2011
31) Adit Ghosh Aug. 2013 – Dec. 2013
32) José David Bermeo López (Colombia Exchange Student) (Aug. 2013 – July 2014)
33) Santiago Alonso Pérez Rubiano (Colombia Exchange Student) (Aug. 2013 – July 2014)
34) Woodrow (Woody) Gilbertson (Purdue) (May 2014 – Dec 2014)
35) Liang Yuan (Richard) Dai ld@njit.edu (May 2015 – Aug. 2015)
36) Jungbo Wu wu622@purdue.edu (May 2016-Aug. 2016)
37) Matt Bliss blissm@purdue.edu (May 2016-Aug. 2016)
38) Unmesha Kale ukale@pudue.edu (May 2016-Aug. 2016)
39) Kyeonghoon Son (VIP program) (Jan. 2020 – Dec. 2020)
40) Cassie Lin You (May 2021 – Sept. 2021)
41) Shreya Rastogi (VIP program) (Aug 2021 – Dec. 2021)
42) Ben Shatkowski (VIP program) (Aug 2021 – May 2022)
43) Catherine Mayer (VIP program) (Aug. 2021 – Dec. 2021)
44) Dingyan Shang (VIP program and independent) (Jan 2021-May 2022)
45) Suyash Mishra (independent) (Aug. 2021-May 2022)
46) Poonyapat Sinpanyalert (VIP program) (Aug 2021 – May 2022)
47) Aswin Ramaswamy (VIP program, summer) (Aug. 2021 – May 2022)
48) Alan Zhang (VIP and summer program) (Aug. 2021 – Aug. 2022)
49) Darin Tsai (VIP and summer program) (Aug. 2021 – Aug. 2022)
50) Aloysius Ribeiro (VIP and summer program) (Aug. 2021 – May 2022)
51) Maximilian Drach (VIP program, summer) (Aug. 2021 – present)
52) Dheeraj Kumar (VIP program, summer, continued) (Jan 2022 – present)
53) Zachary Hunter (summer, continued) (May 2022 - present)
54) Aneesh Chakravarthula (VIP fall, continued independent) (Aug. 2022 – present)
55) Jonathan Kao (VIP fall) (Aug. 2022 – Dec. 2022)
56) Samy Rajaraman (VIP Fall) (Aug. 2022 – Dec. 2022)
57) Kihunn Anderson (VIP Spring) (Jan. 2023 – present)
58) Lakshay Goel (VIP Spring) (Jan. 2023 – present)
59) Roosh Parikh (Jan. 2023 – present)

Past Ph.D. student advisor to 9 individuals (did not complete their PhD in my group)

1) Srikant Srinivasan, Co-advisor with Leonid Rokhinson (Aug. 2005 – Dec. 2006)
2) Abu Naser Zainuddin, (transitioned to S. Datta) (Aug. 2006 – Aug. 2007)
3) Robert Andrawis, transitioned to Kaushik Roy (Aug. 2014 – Jan. 2016)
4) Evan Wilson (finished with non-thesis MS) (Aug. 2012 – May 2017)
5) Frederico Severgnini (transitioned to other group) (June 2016 – May 2017)
6) Enrique Jesus Aldana Sigoña (transistioned to another group) (Aug. 2015 – Dec. 2017)
7) Samik Mukerjee (finished with non-thesis MS) (June 2012 – Dec. 2018)
8) Shree Hari Sureshbabu (transitioned to another group) (Aug. 2018 – May 2019)
9) Han-Wei Hsiao (transistioned to Kubis group) (Aug. 2019 – Aug. 2022)

Past Master Student advisor to 9 individuals (did not complete their Master's degree in my group)

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1) Jing Li, transitioned to K. Roy (Aug 2004 – Aug. 2005).
2) Selvakumaran Vadivelmurugan Aug 2006 – Jan. 2007).
3) Hemanth Hedge, (Aug. 2006 – May 2007)
4) Rezwan Chowdhury, transitioned to CE (Aug. 2006 – May 2007)
5) Seungmin Kim, (transitioned to J. Appenzeller to complete PhD) (Aug. 2007 – Aug. 2008)
6) Ahmed Reza (did not defend a master's thesis), transitioned to K. Roy (Aug. 2012 – May 2014)
7) Sicong Chen, abandoned graduate program (Aug. 2013 – May 2014)
8) Kyle Aiken (failed master's thesis), transitioned to Physics (June 2013 – May 2014)
9) Saima Sharmin (did not defend master's thesis), transitioned K. Roy (Aug. 2012 – Aug. 2015)

Master Student Committee Member

- Wei Qiao (August 2004-Dec. 2005), advised by Prof. David Ebert
- Prabhakar Srinivastava (Jan 2004 – Dec. 2006), advised by Prof. Supriyo Datta
- Zhen Huang (Aug 2006 – Aug. 2008), non-thesis
- Kurtis Cantley (Aug 2005 – Aug 2007), advised by Prof. Mark Lundstrom

Ph.D. Student Committee Member

- Bhaskaran Muralidharan (Aug. 2004 – May 08), advised by Prof. Supriyo Datta
- Wei Qiao (Dec. 2005 – Aug. 2006), advised by Prof. David Ebert
- Kirk Bevan (Dec 2004 – July 2008), advised by Prof. Supriyo Datta
- Ninad Pimparkar (Aug. 2004 – June 2008), advised by Prof. Ashraf Alam
- Behash Behinaein (Aug 2004 – May 2010), advised by Prof. Supriyo Datta
- Stephen Cauley (Aug 2005 – Aug. 2009), advised by Prof. Cheng-Kok Koh and Balakrishnan
- Krishnaswamy Uday Chettiar (Aug. 2005 – Aug 08), advised by Prof. Vladimir Shaleev
- Roksana Mojorad Golizadeh (Aug 2005 – May 09), advised by Prof. Supriyo Datta
- Tehseen Zahra Kazmi (Aug 2005 – Jan. 2011), advised by Prof. Supriyo Datta
- Adina Deborah Scott (Aug 2005 – Dec. 08), advised by Prof. David Janes
- Nathan Lawrence Anderson (Aug. 2008 – May 2012), advised by Prof. Alejandro Strachan
- Eduardo A. Garcia (May 2008 – ?), advised by Prof. David Janes
- Xingjie Ni (Dec. 2007 – May 2012), advised by Prof. Vladimir Shalaev
- Yumi Park (Aug. 2006 – Dec. 2011), advised by Prof. Alejandro Strachan
- Srikant Skinivasan (Aug. 2006 – May 2012), advised by Prof. Supriyo Datta
- Bangda Zhou, (Aug. 2010 – Aug. 2015), advised by Dan Jiao
- Samiran Ganguly (Jan 2011 – May 2016), advised by Prof. Supriyo Datta
- Brian Sutton (Aug. 2012 – ~Aug 2017_, advised by Prof. Supriyo Datta
- David Guzman (Aug. 2013 – ~Aug. 2016), advised by Prof. Alejandro Strachan (MSE)
- Zexi Lu (Aug. 2012 – May 2018), advised by Prof. Xiulin Ruan (ME)
- Abhijith Prakash, (Aug. 2012 – Jan 2018), advised by Prof. Joerg Appenzeller
- Kelsey Rodgers, (Aug. 2011 – May 2016), advised by Prof. Krishna Madhavan (ENE)
- JingJing Shi, (Aug. 2012 – Aug. 2018), advised by Timothy Fisher (ME)
- Zuyuan Wang, (Aug. 2012 – Aug. 2018), advised by Xiulin Ruan (ME)

PRE-PURDUE SCIENTIFIC MENTOR / ADVISOR

- Post-Doc advisor for the National Research Council.to Dr. Olga Lazarenkova at JPL. 01/2003-01/2005.
- Post-Doc mentor / collaborator to Dr. Paul Sotirelis, Texas Instruments, 09/96-01/98.
- Mentor to several summer students in a governmental or industrial laboratory environment:
  - Daniela Francovicchio, Texas Instruments, UT Dallas, 08/95-12/95, NEMO benchmarking.
  - Mukund Swaminathan, Texas Instruments, 06/97-01/98, NEMO software development.
  - William McMahon, Texas Instruments, 05/97-08/97, NEMO database development.
  - Kalen Jordan, JPL, academic part time, 05/01-08/01, Java interface development.
  - Hook Hua, academic part time, 04/02-02/03, Java/XML interface development.
  - Lei Pan, academic part time, 08/03-12/03, parallel application development.

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TECHNICAL GROUP SUPERVISOR (APPLIED CLUSTER COMPUTING TECHNOLOGY GROUP):

Position held from April 2002 – December 2003

- Supervision of 11 computer science, electrical engineering and physics professionals (6 Ph.D., 3 master, 2 bachelor) and one National Research Council post-doc. Responsibilities include:
  - Technical quality of the work produced in the group.
  - Mentoring of the professional careers of the group members (promotions, salary management).
  - Direct interface between two axes of management at JPL: 1) line management (people) and 2) project management (tasks, money). Matching of technical expertise with project requirements.
  - Enforcement of JPL policies.
  - Equipment purchase responsibilities of up to $150,000.
- Direct technical involvement in a diverse set of tasks:
  - Nanoelectronic modeling for quantum computing gates.
  - Nanoelectronic modeling development of numerically tractable open boundary conditions.
  - Spintronic modeling.
  - Evolvable computing (optimization and synthesis using genetic algorithms).
  - Java and portlet-based graphical user interface development.
  - Cluster computing technologies applied to science applications such as optical as well as synthetic aperture radar (SAR) image processing.
  - Adaptive, unstructured mesh refinement.
  - COTS-based on-board image processing.
  - XML-based non relational database design for project descriptions and evaluations.

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PUBLICATIONS

PUBLICATION AND CITATION SUMMARY

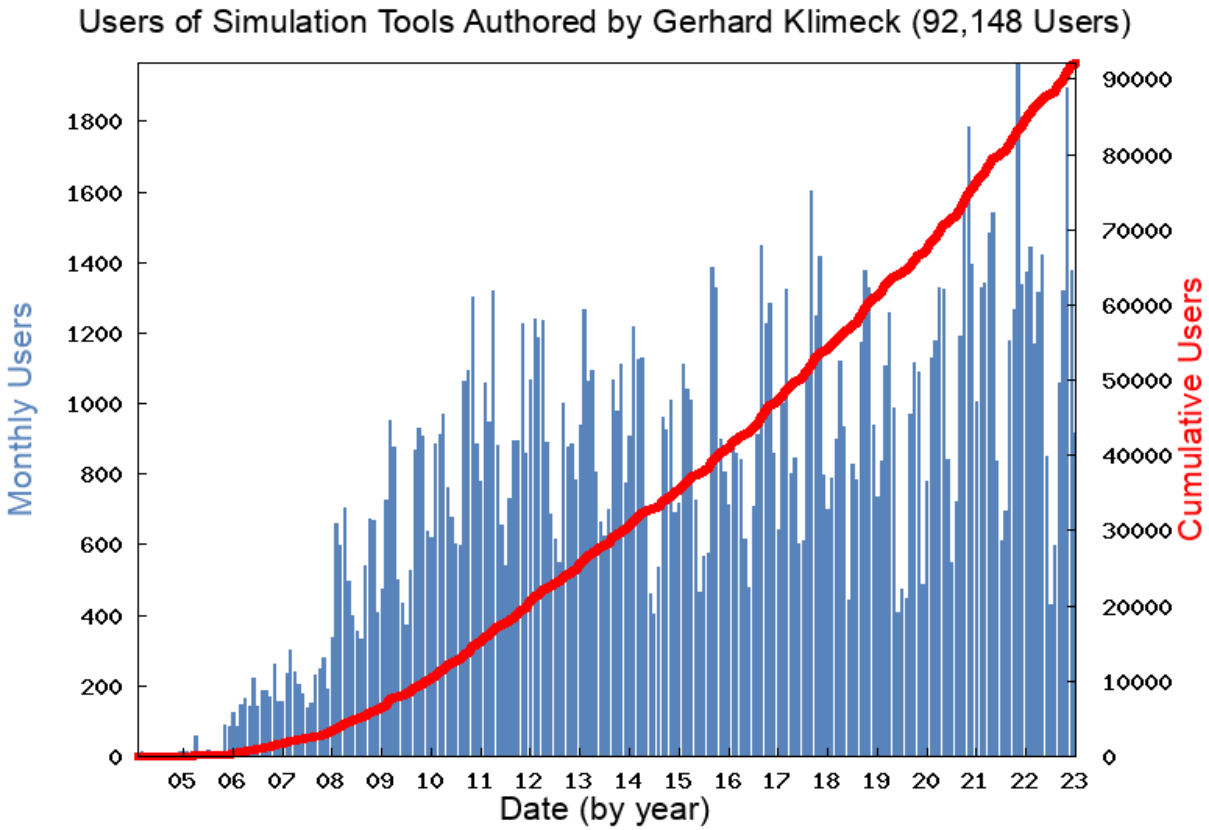
Publication Type	total	Publication Type	total
- Peer reviewed Journals:	305	- Patents:	6
- Peer reviewed proceedings:	239	- Scientific Apps, Tools, Data:	42
- Invited Conference papers:	284	- Technical Reports:	36+
- Contributed conference papers:	520	- Technical Program Reviews:	98+
- Invited Seminars:	191	- Technical Briefings:	111+

Year	Journals	Proceedings	Inv. Conf	Conferences	Tech Rep.	Inv. Sem.	Reviews	Briefings
1990	1/1	0/0	0/0	2/2	0/0	0/0	0/0	0/0
1991	1/2	0/0	0/0	0/2	1/1	0/0	0/0	0/0
1992	1/3	0/0	0/0	3/5	0/1	0/0	0/0	0/0
1993	2/5	0/0	1/1	3/8	1/2	1/1	0/0	0/0
1994	3/8	0/0	3/4	8/16	1/3	2/3	2/2	0/0
1995	2/10	5/5	2/6	6/22	1/4	0/3	8/10	0/0
1996	2/12	3/8	3/9	4/26	0/4	5/8	7/17	0/0
1997	5/17	8/16	4/13	9/35	1/5	3/11	4/21	0/0
1998	7/24	1/17	5/18	5/40	4/9	4/15	0/21	0/0
1999	3/27	5/22	1/19	9/49	2/11	1/16	1/22	0/0
2000	2/29	5/27	2/21	8/57	0/11	3/19	2/24	0/0
2001	6/35	5/32	3/24	12/69	0/11	1/20	1/25	0/0
2002	6/41	2/34	6/30	22/91	9/20	10/30	3/28	0/0
2003	5/46	8/42	9/39	15/106	0/20	4/34	1/29	0/0
2004	9/55	14/56	11/50	20/126	1/21	11/45	7/36	14/14
2005	11/66	12/68	18/68	20/146	3/24	10/55	6/42	9/23
2006	7/73	13/81	18/86	36/182	2/26	13/68	9/51	3/26
2007	17/90	10/91	19/105	29/211	3/29	11/79	4/55	11/37
2008	21/111	21/112	14/119	31/242	3/32	11/90	8/63	6/43
2009	14/125	17/129	8/127	34/276	1/33	10/100	8/71	6/49
2010	16/141	15/144	20/147	35/311	1/34	7/107	6/77	0/49
2011	29/170	18/162	24/171	36/347	1/35	13/120	6/83	20/69
2012	13/183	6/168	24/195	40/387	0/35	15/135	7/90	3/72
2013	21/204	10/178	14/209	18/405	0/35	8/143	3/93	13/85
2014	16/220	10/188	15/224	17/422	0/35	6/149	4/97	1/86
2015	25/245	17/205	8/232	31/453	0/35	10/159	1/98	1/87
2016	24/269	8/213	9/241	25/478	1/36	9/168	x/98	x/87
2017	10/279	5/218	7/248	19/497	x/36	0/168	x/98	x/87
2018	16/295	7/225	6/254	7/504	x/36	6/174	x/98	x/87
2019	8/303	2/227	7/261	6/510	x/36	4/178	x/98	x/87
2020	1/304	0/227	4/265	0/510	x/36	1/179	x/98	x/87
2021	1/305	4/233	8/273	2/513		3/182		3/90
2022	4 subm	6/239	10/283	7/520		9/191		19/109
2023			1/284					2/111

Secondary Citations and h-index from Web of Science (WoS), Scopus (Sc), Google Scholar (GS)

Date	WoS Citations	Scopus Citations	GS Citations	WoS h-index	SC h-index	GS h-index	Years past PhD
2/2002	291						8
2/2003	425						9
4/19/2004	565						10
2/16/2005	672						11
2/15/2006	805						12
2/13/2007	954						13
8/24/2008	1342		1710				14
2/7/2009	1627		1916	22			15
1/27/2010			2516	26			16
1/8/2011	2525		3182	28		27	17
1/27/2012	3191		4956	31		35	18
1/14/2013	3978		6133	34		39	19
1/10/2014	4558		7402	35		44	20
1/14/2015	5349		8672	39		47	21
01/14/2016	6230		10058	41		50	22
02/11/2017	6730	8085	12250	45	45	55	23
01/17/2018	6810	9327	14301	48	50	58	24
09/02/2018	9077	10337	15309	49	51	60	24
01/09/2019	9485	10617	15817	51	51	61	25
01/23/2020	10701	11849	17768	53	55	65	26
1/18/2021	11,739	12,808	19,345	56	56	68	27
1/16/2022	*12,520*	*13,891*	*20,855*	*57*	*58*	*70*	*28*
1/16/2023	*13,599*	*14,944*	*22,555*	*59*	*60*	*72*	*29*

ELECTRONIC TOOL AND DATA PUBLICATIONS (42 TOTAL) > 92,148 USERS



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Work Performed at Purdue (186 + 5 Total)

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INVITED CONFERENCES (273 +11 TOTAL)

Work Performed at Purdue (237 +11 total)

[I285] Gerhard Klimeck, "Quantum transport with NEMO and online simulation with nanoHUB ", Winter School on III-Sb Applications Non-Volatile memories – A modelling perspective, Berlin, Germany,Feb. 27-Mar.3, 2023

[I284] Gerhard Klimeck, "Atomistic, multi-scale, multi-physics quantum transport models for quantitative, predictive nanoscale device designs", 53rd Winter Colloquium on the Physics of Quantum electronics, Snowbird UT, Jan 8-13, 2023. Attendance by invitation only.

[I283] Gerhard Klimeck, "Semiconductor workforce development through immersive simulations on nanoHUB.org", Second International Conference on Carbon Chemistry and Materials at Rome, Italy on October 10-12, 2022 (virtual)

[I282] Gerhard Klimeck, "Mythbusting Scientific Knowledge Transfer with nanoHUB.org", Purdue University Cyberinfrastructure Symposium, Oct. 4, 2022.

[I286] Gerhard Klimeck, "nanoHUB Integration into Semiconductor Education", Computing in Engineering Forum, University of Wisconsin, Madison (virtual), Sept. 20, 2022.

[I280] Gerhard Klimeck, Lynn Zentner, Alejandro Strachan, Michael Zentner, Daniel Mejia, Tanya Faltens, "Semiconductor workforce development through immersive simulations on nanoHUB.org", International Conference on Simulation of Semiconductor Processes and Devices (SISPAD), one of four invited presentations, Sept. 5-9, 2022, Granada, Spain.

[I279] Gerhard Klimeck, "Semiconductor workforce development through immersive simulations on nanoHUB.org", Academia International Webinar on Materials Science & Engineering, August 15 - 16, 2022.

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[I275] Gerhard Klimeck, "nanoHUB: serving millions of learners, teachers, and researchers in one overarching platform", Quantum Science Center, 2nd Annual Quantum Summer School, Purdue University, May 8-12, 2022.

[I274] Gerhard Klimeck, "nanoHUB.org: immersive online semiconductor education and workforce development with broad academic adoption", Education and Workforce Development for the U.S. Microelectronics Industry – Innovative Approaches and Best Practices for Preparing and Expanding the U.S. Semiconductor Workforce, SUNY/MIT/RPI – online, Feb. 3, 2022

[I273] Gerhard Klimeck, Alejandro Strachan, Tanya Faltens, Lynn Zentner, Michael Zentner, Elif Ertekin, "Using nanoHUB.org in Research and Education – a Hands-on Tutorial", IEEE NMDC Conference, Dec. 12-15, 2021

[I272] Gerhard Klimeck, Alejandro Strachan, Lynn Zentner, Michael Zentner, "nanoHUB.org – always 'on' - New Paradigms in Global Scientific Knowledge Transfer, Publishing, and Assessment", Virtual Conference Materials Science and Nanotechnology-2021, September 17-18, 2021

[I271] Gerhard Klimeck, Alejandro Strachan, Lynn Zentner, Michael Zentner, "nanoHUB.org – always 'on' - New Paradigms in Global Scientific Knowledge Transfer, Publishing, and Assessment", Webinar on Nanotechnology, RecentAdvancements in the field of Nanoscience and Nanotechnology, August 31, 2021

[I270] Gerhard Klimeck,, "nanoHUB.org – always "NEMO5, a Parallel, Multiscale, Multiphysics Nanoelectronics Modeling Tool From Basic Physics to Real Devices and to Global Impact on nanoHUB.org", 3rd Edition of Webinar on Nanotechnology, Nano 2021, Endeavor Conferences, Virtual Event. August 2&3, 2021.

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[I267] Gerhard Klimeck, "The nanoHUB Platform", NITRD Big Data Interagency Virtual Workshop on Pioneering the Future of Federally Supported Data Repositories Wednesday Jan 13th - Friday Jan 15th, 2021 https://www.orau.gov/bdworkshop21

[I266] Gerhard Klimeck, "The nanoHUB Platform", 2021 NNI Strategic Planning Stakeholder Workshop, January 11-13, 2021, National Nanotechnology Coordination Office

[I265] Gerhard Klimeck, “The nanoHUB Platform”, Nanoscientific Symposium, Park Systems, Oct. 10, 2020, Virtual Conference.

[I264] Gerhard Klimeck, “A Single Atom Transistor: The Ultimate Scaling Limit – Calibration for Atomistic Device Models”, 28th International Symposium “Nanostructures: Physics and Technology”, Virtual Conference, Oct. 2, 2020, Moscow/St. Petersburg.

[I263] Jennifer E Hoffman, Jay Deep Sau, James R Williams, Gerhard Klimeck, “Majorana Nanomanipulation for Topological Quantum Computing“, OSA, NSF Quantum Leaps Grantees Conference, Sept. 29, 2020.

[I262] Gerhard Klimeck, “Quantum Computing: Myth or Reality – Computer Aided Design Automation”, ESSDRC, Virtual Conference, Sept. 4, 2020, Belgium.

[I261] Gerhard Klimeck, Alejandro Strachan, "nanoHUB role in nanoinformatics and nanoHUB: online simulation and data", 2019 NSF Nanoscale Science and Engineering Grantees Conference, Dec. 9-10, 2019, Alexandria, VA

[I260] Gerhard Klimeck, "The Single-Atom Transistor: How it was Created and What it may Mean for the Future", Keynote speech at the 1st International Symposium on Single Atom Electronics, Joint Institute University of Michigan-Shanghai Jiao Tong University Joint Institute (JI), ¸Oct. 13, 2019 in Shanghai, China.

[I259] Gerhard Klimeck, "nanoHUB.org – always “ON”: New Paradigms in Global Scientific Knowledge Transfer, Publishing, and Assessment", 2019 Latin American Optics & Photonics Workshop, Cancún, Mexico, Monday, September 30, 2019

[I258] Michael Zentner, Stephen Burley, Gerhard Klimeck, Emre Brookes, Mark Miller, Sabine Brunswicker, Dan Stanzione, Sharon Tettegah, "Impact Measurement Strategies for Science Gateways: Present and Future", PEARC Practice & Experience in Advanced Research Computing, Chicago, IL, July 28-August 1

[I257] Gerhard Klimeck, Gustavo Valencia-Zapata, Nathan Denny, Lynn Zentner, Michael Zentner, "nanoHUB user behavior: moving from retrospective statistics to actionable behavior analysis", 11th International Workshop on Science Gateways (IWSG 2019), Ljubljana, Slovenia, June 12-14, 2019

[I256] Gerhard Klimeck, "nanoHUB.org – always “ON”: New Paradigms in Global Scientific Knowledge Transfer, Publishing, and Assessment", A Day Dedicated to the Issues in Science and Its Funding, The University of Montenegro, Podrogica, Montenegro, Tuesday, June 11, 2019

[I255] Gerhard Klimeck, "nanoHUB.org – always “ON”: New Paradigms in Global Scientific Knowledge Transfer, Publishing, and Assessment", 8th Mediterranean Conference on Embedded Computing MECO2019, Budva, Montenegro, Monday, June 10, 2019

[I254] Gerhard Klimeck, "nanoHUB - Always ON - Community Repository and Use", ESA NSF PI Workshop on: Creating and Implementing Sustainability Plans for Data Repositories, Alexandria VA, Thursday, January 25 and Friday, January 26, 2018

[I253] Gerhard Klimeck, "NEMO5 on Blue Waters – A Flexible Package for Nanoelectronics Modeling Problems", Presentation at Blue Waters Symposium 2018, Sunriver, OR, June 3-7, 2018

[I252] Gerhard Klimeck, Michael Zentner, Lynn Zentner, Tillmann Kubis, "nanoHUB.org – always “on”", 4th Workshop on Supercomputing for Computational Bio/Nano/Materials Science, Korea Institute of Science Technology Information (KISTI), Daejeon, Korea, July 10-11, 2018

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[I249] Gerhard Klimeck, "nanoHUB In a Nutshell: Translating Traditional Research To New Paradigms In Publishing, Computing, Research, and Education", 2018 NSF SI2 PI meeting, April 30 and May 1, 2018, Washington, D.C., The Westin Washington D.C. City Center

[I248] Gerhard Klimeck, "Leading Future Electronics Into the Nano Regime Using Quantum Atomistic Simulations in NEMO5", Presentation at Blue Waters Symposium 2017, Sunriver, OR, May 16-19, 2017

[I247] Xinchen Guo, Daniel Lemus, Daniel Mejia, Jim Fonseca, Gerhard Klimeck, Tillmann Kubis, "NEMO5: A Parallelized Multi-Scale and Multi-Physics Nanodevices Simulation Software", Presentation at SIAM Conference on Computational Science and Engineering, Atlanta, GA, February 27-March 3, 2017

[I246] Gerhard Klimeck, "Keynote - Nanoscale modeling and simulation", 2017 NSF Nanoscale Science and Engineering Grantees Conference, December 12-13, 2017, Westin Hotel - Arlington, VA

[I245] Gerhard Klimeck, "Single investigator vs centerlevel team research", EVPRP Workshop: Preparing for Large, CenterLevel Research Proposals, Purdue University, March 21, 2017

[I244] Gerhard Klimeck, "nanoHUB: Going Beyond Specialized Capabilities", FAME Center 5th Annual Review, February 14-15, 2017, Luskin Conference Center, Los Angeles (UCLA Campus)

[I243] Gerhard Klimeck, "nanoHUB: translating traditional research to new paradigms in publishing, computing, research, & education", National Science Foundation Seminar, Arlington, VA, Feb 8, 2017

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[I241] Tillmann Kubis, Gerhard Klimeck, Michael Povolotskyi, Jim Fonseca, Xinchen Guo, Daniel Lemus, Daniel Mejia, James Charles, Prasad Sarangapani, KuangChung Wang, "Post-Moore Nanoscale Logic Devices", ALCF Aurora Early Science Program, 2016

[I240] Gerhard Klimeck, "Knowledge Transfer in nanoHUB World's Largest Nanotech User Facility", 2016 NSF Nanoscale Science and Engineering Grantees Conference, Arlington, VA, Dec 12-13, 2016

[I239] Gerhard Klimeck, "Success Examples and Challenges of Multi-Scale and Multi-Expertise Modeling and Simulations (nanoHUB/NEMO5)", MRS Conference, Boston, Nov. 28, 2016

[I238] Gerhard Klimeck, "Myth busting knowledge generation and transfer with nanoHUB ", DP Open House, Purdue, Sept 23, 2016

[I237] Gerhard Klimeck, "NEMO5, a Parallel, Multiscale, Multiphysics Nanoelectronics Modeling Tool From Basic Physics to Real Devices and to Global Impact on nanoHUB.org", Workshop on Emerging Electronic Materials and Devices (EEMD2016), University of Science and Technology of China (USTC), Hefei, China, July 9-11, 2016

[I236] Gerhard Klimeck, "Single investigator vs centerlevel team research", EVPRP Workshop: Making the Transition to Strategies for Large, CenterLevel Research Proposals, Purdue University, March 22, 2016

[I235] Hesameddin Ilatikhameneh, "Novel steep transistors", StarNET E-Workshop, Purdue University, IN, USA (2016)

[I234] Gerhard Klimeck, "nanoHUB: always ON 24/7", CHiMaD Data, Databases & Discovery Workshop II, Northwestern University, Evanston, IL, May 2, 2016

[I233] Gerhard Klimeck, "Myth busting knowledge generation and transfer with nanoHUB and NEMO", Workshop on Emerging and timely capabilities and research objectives: High Entropy Materials, Ultra-strong Molecules, and Nanoelectronics, Defense Materials Manufacturing and Infrastructure (DMMI), The National Academies of Sciences, Engineering, Medicine, Keck Center Washington D.C. February 10-11 (Wednesday-Thursday) 500 Fifth Street, NW Washington D.C. 20001

[I232] Gerhard Klimeck, "Mythbusting Nanotechnology Knowledge Transfer through Novel Cyberinfrastructure", Dawn or Doom conference, Purdue University, West Lafayette, IN, Sept. 24, 2015

[I231] Gerhard Klimeck, "nanoHUB.org: Novel Knowledge Transfer: What is it? Some History. Future?", Purdue University: Birck Nanotechnology Center - 10th Anniversary Celebration, MRGN 121, October 30, 2015

[I230] Hesameddin Ilatikhameneh, Fan Chen, Saima Sharmin, Tarek Ameen, Yaohua Tan, Pengyu Long, Jun Huang, Zhengping Jiang, Michael Povolotskyi, Rajib Rahman, Gerhard Klimeck, Joerg Appenzeller, zhihong chen, Patrick Fay, Mark Rodwell, "STEEP Transistor Modeling with NEMO5", Steep Transistors Workshop, University of Notre Dame, Notre Dame, IN, October 5-6, 2015

[I229] Mark Rodwell, Cheng-Ying Huang, J. Rode, P. Choudhary, Sanghoon Lee, Arthur Gossard, Pengyu Long, Evan Wilson, Saumitra Mehrotra, Michael Povolotskyi, Gerhard Klimeck, M. Urteaga, B. Brar, Varistha Chobpattana, S. Stemmer, "Transistors for VLSI, for Wireless: A View Forwards Through Fog", 73rd Device Research Conference (DRC), Ohio State University,June 21-24, 2015

[I228] Mehdi Salmani-Jelodar, Hesameddin Ilatikhameneh, Prasad Sarangapani, Saumitra Mehrotra, SungGeun Kim, Kwok Ng, Gerhard Klimeck, "Tunneling: The Major Issue in Ultra-scaled MOSFETs", IEEE Nano, Rome, Italy, July 26-30, 2015

[I227] Gerhard Klimeck, "Using Nanohub.Org in Research and Education – A Hands-on Workshop", IEEE Nano, Rome, Italy, July 26-30, 2015

[I226] Gerhard Klimeck, "Mythbusting Scientific Knowledge Transfer with nanoHUB.org ", CECD/ME Symposium on Computation-Enabled Materials, 20 May 2015, University of Maryland College Park, MD

[I225] Michael Zentner, Gerhard Klimeck, Nathan Denny, Dwight McKay, Steve Snyder, Gustavo Valencia, Swaroop Samek, "nanoHUB: the Growth of a United States Cyberinfrastructure into a Global Learning and Research Community", The Eleventh International Nanotechnology Conference on Communication and Cooperation (INC 11), Hilton Fukuoka Sea Hawk, Fukuoka, Japan, May 11-13, 2015.

[I224] Gerhard Klimeck, "Marching Towards The End of The Transistor Roadmap with NEMO: From MOS devices to Tunneling Devices and Single Atom Transistors", Workshop: Current Topics in Nano Simulations (CT-NanoSim2014), Tsukuba, Japan, March 11, 2014

[I223] Gerhard Klimeck, "NEMO - Nanoelectronic Modeling: for HPC, Industry, Research and for everyone on nanoHUB.org", EPASA2014, Tsukuba, Japan, March 6-8, 2014

[I222] Krishna Madhavan, Gerhard Klimeck, "Next generation cyberinfrastructure for the nanoscale science and engineering community: nanoHUB.org.", Nanoscale Science and Engineering Education Workshop, Arlington, VA. (2014).

[I221] Krishna Madhavan, Gerhard Klimeck, "nanoHUB in Education", Annual Technical Meeting of the Society of Engineering Sciences, West Lafayette, IN. (2014).

[I220] Gerhard Klimeck, "Non Equlibrium Greens Function NEGF (quantum transport, nanowires, ballistic effects etc.)", 2014 International Conference on Computer Aided Design, November 3-6, 2014, San Jose, California

[I219] Gerhard Klimeck, Krishna Madhavan, Michael Zentner, Lynn Zentner, Victoria Farnsworth, Michael McLennan, "nanoHUB.org: Redefining research and learning in nanoscale engineering and science", University of the Future Workshop Purdue University, West Lafayette, Indiana, USA, 28-29 October, 2014

[I218] Gerhard Klimeck, "Elevating nanoHUB to the Next Level Vision and Status 2014", Program of the International CECAM-Tutorial, Bremen Center for Computational Materials Science – BCCMS University of Bremen, October 5th – 6th, 2014

[I217] Gerhard Klimeck, "Development of the NEMO tool suite: from basic physics to real industrial devices and to global impact on nanohub.org", Program of the International CECAM-Tutorial, Bremen Center for Computational Materials Science – BCCMS University of Bremen, October 5th – 6th, 2014

[I216] Gerhard Klimeck, "Introduction to nanoHUB", SES Annual Technical Meeting; October 1-2, 2014, Purdue University

[I215] Gerhard Klimeck, "Mythbusting Scientific Knowledge Transfer with nanoHUB.org ", KEYNOTE: Mechanics in Material Science,SES Annual Technical Meeting; October 1-2, 2014, Purdue University

[I214] Gerhard Klimeck, "Elevating nanoHUB to the Next Level - Vision and Status 2014", eScience workshop, MURPA, Melbourne, Australia, Sept 24, 2014 (remote)

[I213] Gerhard Klimeck, Parijat Sengupta, Yaohua Tan, Michael Povolotskyi, Tillmann Kubis, "Topological Insulator Modeling within Atomistic Nanoelectronic Modeling", NEMO Representations, Workshop on the modeling of Topological Insulators and Majorana Systems, Delft Technical University, Sept 22-23, 2014

[I212] Gerhard Klimeck, "Mythbusting today's Nanotechnology and Knowledge Transfer through nanoHUB.org", Dawn or Doom, Purdue University, Sept 18, 2014

[I211] Gerhard Klimeck, "NEMO5 Overview", QuantumHagen, Modeling of Electronic Devices and Materials at the Nanoscale, workshop in Copenhagen, Denmark on July 1-3, 2014

[I210] Gerhard Klimeck, "Scientific Simulation Software as a Service", Session: "Outsourcing Science: Will the Cloud Transform Research?", AAAS Annual Meeting, 14 February, 2014, Chicago

[I209] Michael Zentner, Gerhard Klimeck, "On Safari in nanoHUB: The Hunt for Prototypical Users", HUBbub13, Indianapolis, IN, 2013.

[I208] Gerhard Klimeck, "Short Course on NanoHub", 2013 NSF Nanoscale Science and Engineering Grantees Conference,December 4-6, 2013 Westin Hotel - Arlington, VA

[I207] Gerhard Klimeck, Mehdi Salmani-Jelodar, Saumitra Mehrotra, Abhijeet Paul, Hoon Ryu, Sunhee Lee, Yu He, Daniel Lemus, Bozidar Novakovic, Tillmann Kubis, Michael Povolotskyi, "Development of the NEMO Tool Suite From Basic Physics to Real Devices and to Global Impact on nanoHUB.org", Embedded tutorial on FinFET: A Multifaceted Perspective for CAD Engineers , International Conference on Computer Aided Design, Nov 18-21, 2013, San Jose, CA

[I206] Gerhard Klimeck, Krishna Madhavan, Michael Zentner, Lynn Zentner, Victoria Farnsworth, Michael Povolotskyi, Tillmann Kubis, Jim Fonseca, Bozidar Novakovic, "Taking Nanoelectronics to the Next Level Through NEMO and nanoHUB.org", CMSI International Symposium 2013: Extending the power of computational materials sciences with K-computer, Tokyo, Japan, Oct 21 -22, 2013

[I205] Gerhard Klimeck, "Mythbusting Scientific Knowledge Transfer with nanoHUB.org", Second KredibleNet workshop on Reputation, Trust, and Authority at Stanford University, Oct 18, 2013

[I204] Gerhard Klimeck, "nanoHUB.org – A Science Gateway with global usage and impact CENIC", Corporation of Education network Initiatives in California, Big Data, Big Network Workshop, Oct 10, 2013

[I203] Gerhard Klimeck, "Development of the NEMO Tool SuiteFrom Basic Physics to Real Devices and to Global Impact on nanoHUB.org", KEYNOTE at The International Conference on Simulation of Semiconductor Processes and Device, Glasgow, UK, Sept 3-5, 2013

[I202] Gerhard Klimeck, "nanoHUB tutorial", IEEE Nano Conference, Beijing, Aug 5-10, 2013

[I201] Gerhard Klimeck, "Short Course on NanoHUB", INC9, The Ninth International Nanotechnology Conference on Communication and Cooperation, Berlin, Germany, May 13-16, 2013

[I200] Gerhard Klimeck, "Mythbusting Scientific Knowledge Transfer with nanoHUB.org", eScience workshop, Melbourne, Australia, March 20, 2013 (remote)

[I199] Gerhard Klimeck, "Mythbusting scientific knowledge transfer with nanoHUB.org: Collaborative research and dissemination with quantifiable impact on research and education", 245th ACS National Meeting, New Orleans, LA, April 8, 2013

[I198] Gerhard Klimeck, Rajib Rahman, Hoon Ryu, Sunhee Lee, Yui-Hong Tan, "Nanoelectronic Modeling (NEMO) for Si-based Quantum Electronics", International workshop on Silicon Quantum electronics Villard-de-Lans 7-8 February 2013

[I197] Gerhard Klimeck, "Multi-Million Atom Simulations for Single Atom Transistor Structures", Foresight Institute Technical Conference, Illuminating Atomic Precision, January 11-13, 2013, Palo Alto, CA

[I196] Gerhard Klimeck, "Mythbusting Knowledge Transfer Mechanisms through Science Gateways", Foresight Institute Technical Conference, Illuminating Atomic Precision, January 11-13, 2013, Palo Alto, CA

[I195] Krishna Madhavan, Gerhard Klimeck, "nanoHUB.org: Democratizing Nanoscale Modeling, Simulations, and Education through a Cloud-based Science Gateway.", Invited lecture at the CI Days, Michigan State University, Lansing, MI. (October 2012).

[I194] Gerhard Klimeck, "Mythbusting Scientific Knowledge Transfer with nanoHUB.org", HUBbub conference, Indianapolis, Sept 24-25, 2012

[I193] Gerhard Klimeck, "nanoHUB Nanoscale Modeling & Simulation Workshop", TechConnect World, Santa Clara, CA, June 18-21, 2012

[I192] Gerhard Klimeck, "High-Performance Computing for Atomistic Materials Modeling", NSTI Nanotechnology Conference, TechConnect World, Santa Clara, CA, June 18-21, 2012

[I191] Gerhard Klimeck, "Tutorial: Atomistic Modeling of Band-to-Band-Tunneling Transistors and nanoHUB tools", Device Research Conference, Penn State, June 17, 2012

[I190] Gerhard Klimeck, "nanoHUB.org: Mythbusting Scientific Knowledge Transfer", International Workshop "Novel Ideas in Optics: From Advanced Materials to Revolutionary Applications", Purdue University, May 31-June 1, 2012

[I189] Gerhard Klimeck, "Mythbusting Knowledge Transfer with nanoHUB.org", Purdue Preside3nt Council's Back to School, Purdue University, Oct. 5, 2012

[I188] Gerhard Klimeck, "Mythbusting Knowledge Transfer with nanoHUB.org: A software as a service cloud focused on end-to-end application users, application developers, and 24/7 service", IEEE International Conference on eScience 2012, Chicago, Oct. 8-12, 2012

[I187] Gerhard Klimeck, "The Single Atom Transistor", (substituted for a missing speaker), IEEE Central Indiana Section, Latest Trends in Emerging Topics for Practicing Engineers, Indianapolis, Nov. 10, 2012

[I186] Gerhard Klimeck, "nanohub.org - An Online Virtualization Tool Supporting Experiments in Nanotechnology", IEEE Central Indiana Section, Latest Trends in Emerging Topics for Practicing Engineers, Indianapolis, Nov. 10, 2012.

[I185] Gerhard Klimeck, "nanoHUB Demo", 2012 NSF Nanoscale Science and Engineering Grantees Conference, Dec. 3-4, 2012

[I184] Jim Fonseca, "NEMO5 and nanoHUB", Quantum Technology: Computational Models for Quantum Device Design, Banff International Research Station, Banff, Canada, January 2012

[I183] Gerhard Klimeck, Michael McLennan, "nanoHUB User Session", 2012 NSF Nanoscale Science and Engineering Grantees Conference, Dec. 3-4, 2012

[I182] Gerhard Klimeck, "Mythbusting Scientific Knowledge Transfer via nanoHUB.org", Challenges in PV Science, Technology, and Manufacturing: A workshop on the role of theory, modeling and simulation, Purdue University, August 2 & 3, 2012

[I181] Gerhard Klimeck, "Simulation of ultrasmall structures and devices", ICSNN 2012, Dresden, July 22-27, 2012

[I180] Gerhard Klimeck, "Mythbusting with nanoHUB.org the first science gateway software as a service cloud focused on end to end application users AND application developers", XSEDE12, Chicago, July 18, 2012

[I179] Gerhard Klimeck, "Modeling devices in the No MOS regime", No MOS Workshop , Washington DC, NIST, June 7 &8, 2012

[I178] Gerhard Klimeck, "Mythbusting Scientific Knowledge Transfer with nanoHUB.org", workshop on Building the Materials Innovation Infrastructure: Data and Standards, Washington DC, May 14-15, 2012

[I177] Gerhard Klimeck, Hoon Ryu, Sunhee Lee, Yui-Hong Tan, Neerav Kharche, Zhengping Jiang, Lloyd Hollenberg, Michelle Simmons, Martin Fuechsle, Bent Weber, Jill Miwa, Suddhasatta Mahapatra, Andrea Morello, Andrew Dzurak, "Atomistic, Multi-Scale, Multi-Physics Modeling of Extended Si Quantum Devices – Outreach Opportunities for CQCT", CQCT Workshop, Chowder Bay, Sydney, Feb 15-16, 2012.

[I176] Gerhard Klimeck, Hoon Ryu, Sunhee Lee, Yui-Hong Tan, Rajib Rahman, Seung Park, Neerav Kharche, Gabriel Lansbergen, Jan Verduijn, Bent Weber, Lloyd Hollenberg, Sven Rogge, Michelle Simmons, Richard Muller, "Million-Atom Electronic Structure Simulations for Realistically Large Si-Based Quantum Devices", International Workshop On Silicon Quantum Electronics, Chowder Bay, Sydney, Feb 13-14, 2012.

[I175] Bent Weber, Suddhasatta Mahapatra, Thomas Watson, Michelle Simmons, Hoon Ryu, Sunhee Lee, Yui-Hong Tan, Gerhard Klimeck, Lloyd Hollenberg, "Silicon at the Fundamental Scaling Limit: Atomic-scale Donor-based Quantum Electronics", ICYRAM 2012 Session EM1: Inorganic Semiconductor (and Metal) Nanoelectronics

[I174] Krishna Madhavan, Gerhard Klimeck, "nanoHUB.org: Platforms based strategy for global impact in nanoscale engineering and science research and education", Invited presentation at the NSF EEC Grantees Conference, Washington, DC. (2012).

[I173] Gerhard Klimeck, Hoon Ryu, Sunhee Lee, Yui-Hong Tan, Lloyd Hollenberg, Michelle Simmons, Martin Fuechsle, Bent Weber, Jill Miwa, Suddhasatta Mahapatra, "Atomistic, Multi-Scale, Multi-Physics Modeling of Single Impurity Devices", International Workshop on Silicon Quantum Electronics, Sydney, Feb 13-14, 2012

[I172] Seung Park, Saumitra Mehrotra, Tillmann Kubis, Gerhard Klimeck, Mark Lundstrom, "What is different below 10 nm?", Invited presentation at the NNIN Symposium on Frontiers in Nanoscale Transistors and Electronics, Santa Barbara, CA, February 6, 2012.

[I171] Gerhard Klimeck, Hoon Ryu, Sunhee Lee, Yui-Hong Tan, Neerav Kharche, Zhengping Jiang, Lloyd Hollenberg, Michelle Simmons, Martin Fuechsle, Bent Weber, Jill Miwa, Suddhasatta Mahapatra, Andrea Morello, Andrew Dzurak, "Atomistic, Multi-Scale, Multi-Physics Modeling of Extended Si Quantum Devices", Center for Quantum Computing (CQCT) 2011 Annual Workshop, The Seargents Mess, Chowder Bay,Sydney. Feb 15-16, 2011.

[I170] Krishna Madhavan, Gerhard Klimeck, "Deriving deep insights about the impact of e-Science research", Keynote talk presented at the Workshop on Measuring the Impact of e-Science Research, 7th IEEE International Conference on e-Science 2011, Stockholm, Sweden, December 5 - 8, 2011

[I169] Gerhard Klimeck, "Mythbusting Scientific Knowledge Transfer: nanoHUB usage Scenarios and Impact", Nanoinformatics 2011, Arlington, VA, Dec 8th, 2011

[I168] Gerhard Klimeck, "Second Annual NanoHUB.org User Forum 2011", NSF Nanoscale Science and Engineering Grantees Conference, Education Networks and Programs, Dec. 6, 2011

[I167] Gerhard Klimeck, "NCN: Global Initiative About 'Electronics from the Bottom-up'", 2011 NSF Nanoscale Science and Engineering Grantees Conference, Education Networks and Programs, Dec. 6, 2011

[I166] Gerhard Klimeck, "nanoHUB.org powered by HUBzero® – A Platform for Collaborative Research and Dissemination with Quantifiable Impact on Research and Education", Palmer Commons, Cyberinfrastructure (CI) Days 2011, Nov. 29 - Dec. 1, 2011, Ann Arbor, MI

[I165] Gerhard Klimeck, Krishna Madhavan, Diane Beaudoin, Michael Zentner, Lynn Zentner, Swaroop Shivarajapura, Nathan Denny, Victoria Farnsworth, George Adams III., "Knowledge Transfer via a Global Cyberinfrastructure for over 170,000 Annual nanoHUB.org Users", Invited to participated at the National Academies Keck Futures Initiative, Ecosystem Services: Charting a Path to Sustainability, Irvine CA, Nov. 10-13, 2011

[I164] Gerhard Klimeck, "nanoHUB.org: A Global Cyberinfrastructure Centered at Old Purdue", Purdue West Coast Partnership Center, Discovery with Delivery Symposium, Friday Oct. 28, 2011, Vineyard Conference Center, Cisco Systems, San Jose, CA.

[I163] Gerhard Klimeck, "Nanoelectronic Modeling and nanoHUB.org:where new devices and new materials meet at the atomic scale", IEEE Nanotechnology Materials and Devices Conference (IEEE NMDC 2011), Oct. 18-21, 2011 at The Shilla Jeju, Korea

[I162] Gerhard Klimeck, "Cyberinfrastructure serving over 170,000 users in 172 countries", Nanoelectronics: Physics and Devices Workshop, in Honor of Prof. Dr. Ulrich Kunze, Ruhr University Bochum, Oct. 14, 2011

[I161] Gerhard Klimeck, "nanoHUB - a nanotechnology cyberinfrastructure serving over 170,000 users in 172 countries", Nanoelectronics: Physics and Devices Workshop, 14. Oktober 2011, Ruhr University, Bochum.

[I160] Gerhard Klimeck, "nanoHUB.org Cyberinfrastructure: Innovating Knowledge Transfer", ICTPI: The International Conference on Technology Policy and Innovation, Bogota, Colombia, September 8-9, 2011

[I159] Lynn Zentner, Saumitra Mehrotra, Gerhard Klimeck, "Introduction to nanoHUB.org – online simulation and more", Tutorial at IEEE nano conference, Portland, Aug, 2011.

[I158] Gerhard Klimeck, Krishna Madhavan, Lynn Zentner, George Adams III., Victoria Farnsworth, Michael Zentner, Nathan Denny, Mathieu Luisier, Sebastian Steiger, Michael Povolotskyi, Hong-Hyun Park, Tillmann Kubis, "High Performance Computational Nanotechnology for Research and Education on nanoHUB.org", TeraGrid Conference, July 18-22, 2011, Salt Lake City.

[I157] Gerhard Klimeck, "Quantitative multi-million atom simulations for quantum dots and single impurities in Si", CMOS Emerging Technologies, June 15-17, 2011, Whistler, British Columbia.

[I156] Gerhard Klimeck, "nanoHUB.org Tutorial 1) nanoHUB impact 2) Semiconductor and Quantum Mechanics Education", proceedings of the IEEE Device Research Conference (DRC), June 20-22 2011.

[I155] Gerhard Klimeck, George Adams III., Krishna Madhavan, Nathan Denny, Michael Zentner, Swaroop Shivarajapura, Lynn Zentner, Diane Beaudoin, "Social Networks of Researchers and Educators on nanoHUB.org", proceedings of the 11th IEEE/ACM International Symposium on Cluster, Cloud and Grid Computing, CCGrid 2011, Newport Beach, CA, USA, May 23-26, 2011.

[I154] Gerhard Klimeck, George Adams III., Krishna Madhavan, Nathan Denny, Michael Zentner, Swaroop Shivarajapura, Lynn Zentner, Diane Beaudoin, "Social Networks of Researchers and Educators on

nanoHUB.org", proceedings of the 11th IEEE/ACM International Symposium on Cluster, Cloud and Grid Computing, CCGrid 2011, Newport Beach, CA, USA, May 23-26, 2011.

[I153] Gerhard Klimeck, "nanoHUB.org - Future Cyberinfrastructure serving over 170,000 users today", NNIN-C Workshop, Advanced Modeling and Simulation of NEMS/MEMS and Nano/Microfluidic Devices, Ann Arbor, Michigan, April 19-20 2011

[I152] Gerhard Klimeck, George Adams III., Krishna Madhavan, Nathan Denny, Michael Zentner, Swaroop Shivarajapura, Lynn Zentner, Diane Beaudoin, Mehdi Salmani-Jelodar, "Exploring the Impact of nanoHUB.org on Research and Education", HUBbub 2011, the HUBzero conference, April 5-6, 2011, Indianapolis. Presentation online at http://hubzero.org/resources/429

[I151] Lynn Zentner, Gerhard Klimeck, Krishna Madhavan, George Adams III., "Success Criteria for Establishing a Thriving HUBzero Based Site: A Model for Science 2.0", HUBbub 2011, the HUBzero conference, April 5-6, 2011, Indianapolis. Presentation online at http://hubzero.org/resources/408

[I150] Gerhard Klimeck, "Success examples and challenges of multi-scale and multi-expertise modeling and simulations", Conference on Materials for Energy Applications — Experiment, Modeling and Simulations, March 30 - April 1, 2011, Terranea Resort, Rancho Palos Verdes, CA

[I149] Gerhard Klimeck, "Device Modeling for Si Spin Qubits", Centre for Quantum Computation and Communication Technology, Inaugural Kick-Off Meeting, Syndney Australia, Jan 19-21, 2011.

[I148] Sebastian Steiger, Michael Povolotskyi, Hong-Hyun Park, Tillmann Kubis, Ganesh Hegde, Denis Areshkin, Benjamin Haley, Jean Sellier, Mark Rodwell, Gerhard Klimeck, "The Nanoelectronic Modeling Tool NEMO5: Capabilities, Validation, and Application to Sb-Heterostructures", Device Research Conference (DRC) 2011, Santa Barbara CA

[I147] Michael McLennan, Gerhard Klimeck, "Atomistic Modeling and Simulation Tools for Nanoelectronics and their Deployment on nanoHUB.org", US-India Network Enabled Research Collaboration Workshop, Lalit Hotel, New Delhi, India, Dec. 5 - 7, 2010

[I146] Gerhard Klimeck, "Keynote: The NCN and Modeling and Simulation of Nanosystems", 2010 NSF Nanoscale Science and Engineering Grantees Conference, Dec. 6-8, 2010, The Westin Arlington Gateway - Arlington, VA

[I145] Michael McLennan, Gerhard Klimeck, "Introducing the Rappture Toolkit", Building a Collaborative Framework for Nanoscale Simulations Joint NNIN/NCN Fall Workshop, Cornell University, Nov 14-16, 2010

[I144] Gerhard Klimeck, "nanoHUB.org: Sociology and Cybertechnology to enable Multidisciplinary Research and Education for over 160,000 Annual Users", Building a Collaborative Framework for Nanoscale Simulations Joint NNIN/NCN Fall Workshop, Cornell University, Nov 14-16, 2010

[I143] Mark Rodwell, William Frensley, Sebastian Steiger, E. Chagarov, S. Lee, Hoon Ryu, Y. Tan, Ganesh Hegde, L Wang, J. Law, Timothy Boykin, Gerhard Klimeck, P. Asbeck, A. Kummel, J. Schulman, "III-V FET Channel Designs for High Current Densities and Thin Inversion Layers", Device Research Conference (DRC), 21-23 June 2010

[I142] Gerhard Klimeck, Mathieu Luisier, Timothy Boykin, Xueping Jiang, Neerav Kharche, Yu Zhou, Saroj K.Nayak, "Atomistic Graphene Transistors - New Device or New Material?", University of Minnessota Nanotech Conference, Oct 7 and 8, 2010

[I141] Gerhard Klimeck, "Nano-Scale Simulations", Second Annual Nano-Link Conference, October 5-6, 2010, Minneapolis

[I140] Gerhard Klimeck, Mathieu Luisier, Timothy Boykin, Xueping Jiang, Neerav Kharche, Yu Zhou, Saroj K.Nayak, "Atomistic Graphene Transistors - New Device or New Material ?", NRI Workshop on Carbon Based Electronics, Albany NY, Sept. 21-22, 2010

[I139] Tillmann Kubis, Gerhard Klimeck, Peter Vogl, "Non-equilibrium Green", International Workshop for Computational Electronics, October 27th-29th, Pisa, Italy (2010)

[I138] Gerhard Klimeck, "Success Examples and Challenges of Multi-Scale and Multi-Expertise Modeling and Simulations", ARL

[I137] Gerhard Klimeck, "HUBzero: Future Sociology and Cybertechnology that empowers over 137,000 Annual Users in Research, Education, and Industry Today", SME/OEM Midwest Pilot for Modeling and Simulation Summit & Workshop, August 31, 2010, Gleacher Center, University of Chicago Booth School of Business

[I136] Gerhard Klimeck, Krishna Madhavan, "nanoHUB tutorial", IEEE Nano 2010, Seoul Korea, Aug. 17-20, 2010

[I135] Gerhard Klimeck, Sunhee Lee, Hoon Ryu, Suddhasatta Mahapatra, Michelle Simmons, Lloyd Hollenberg, "Equilibrium Bandstructure of a Phosphorus δ-doped Layer in Silicon using a Tight-binding Approach", IEEE Nano 2010, Seoul Korea, Aug. 17-20, 2010.

[I134] Gerhard Klimeck, "Interactive Online Curricula and Resources for 125,000 nanoHUB.org Users", Spring University Materials Council Meeting Workshop on Computational Materials Education, June 23-24, Northwestern University, Evanstan IL, (2010)

[I133] Gerhard Klimeck, "nanoHUB.org: Future Cyberinfrastructure serving over 125,000 users today", International Association of Technological University Libraries (IATUL), 31st Annual IATUL Conference, Purdue University, June 20-14, 2010.

[I132] Gerhard Klimeck, Dragica Vasileska, "Semiconductor Device and Quantum Mechanics Education on nanoHUB.org", ASEE IN/IL section meeting, Purdue University, April 9-10, 2010

[I131] Mathieu Luisier, Gerhard Klimeck, "Atomistic Simulations of Nanoelectronic Devices", International Conference on Computational and Experimental Engineering and Sciences (ICCES'10), Las Vegas, Nevada, 28 March – 1 April 2010

[I130] George Adams III., Gerhard Klimeck, "nanoHUB.org Gateway for Computational Nanotechnology", International Conference on Computational and Experimental Engineering and Sciences (ICCES'10), Las Vegas, Nevada, 28 March – 1 April 2010.

[I129] Gerhard Klimeck, Mathieu Luisier, Hoon Ryu, Sunhee Lee, Rajib Rahman, Lloyd Hollenberg, Bent Weber, Michelle Simmons, "Atomistic Electronic Structure and Transport Modeling of Realistically Extended Nanoelectronic Devices", 2010 International Conference On Nanoscience and Nanotechnology (ICONN), Sydney, 22-26th Feb. 2010.

[I128] Gerhard Klimeck, Mathieu Luisier, Hoon Ryu, Sunhee Lee, Rajib Rahman, Lloyd Hollenberg, Bent Weber, Michelle Simmons, "Atomistic Electronic Structure and Transport Modeling of Si:P devices", Center for Quantum Computing (CQCT) 2010 Annual Workshop, Harbours Edge, Darling Harbour, Sydney. Feb 15-17, 2010.

[I127] Gerhard Klimeck, "Keynote: Conceptual Challenges for Simulation in Nanotechnology", 2009 NSF Nanoscale Science and Engineering Grantees Conference, December 7-9, 2009, Arlington, VA

[I126] Gerhard Klimeck, "Participant at National Academy of Engineering", 2009 U.S. Frontiers of Engineering Program, Irvine, CA, Sept. 9-12, 2009, ~240 suggested applicants, ~80 invited participants.

[I125] Gerhard Klimeck, Mathieu Luisier, Benjamin Haley, Sunhee Lee, Hoon Ryu, Neerav Kharche, Faisal Saied, Steven Clark, Hansang Bae, "NEMO 3-D and OMEN: Nanoelectronic Modeling for Advanced Semiconductor Device Studies and their Deployment on nanoHUB.org", TeraGrid Conference, Crystal City, June 21-26, 2009.

[I124] Gerhard Klimeck, Mathieu Luisier, Benjamin Haley, Sunhee Lee, Hoon Ryu, Faisal Saied, Steven Clark, Hansang Bae, "Advancing Nanoelectronic Devices through Peta-Scale Computing and Deployment on nanoHUB", SciDAC Conference, San Diego, June 15-19, 2009.

[I123] Gerhard Klimeck, Mathieu Luisier, "From NEMO1D and NEMO3D to OMEN: moving towards atomistic 3-D quantum transport in nano-scale semiconductors", NRI e-Workshop, April 28, 2009.

[I122] Mathieu Luisier, Gerhard Klimeck, "Full-Band and Atomistic Modeling of Nanoelectronic Devices", Nanotech Conference and Expo, Houston, TX, May 7-9, 2009.

[I121] George Adams III., Mark Lundstrom, Gerhard Klimeck, Michael McLennan, "nanoHUB.org: An Example of Cyberinfrastructure for Simulation-Driven Science", CI Days at UT Pan American, March 27, 2009.

[I120] Gerhard Klimeck, Mathieu Luisier, Rajib Rahman, Muhammad Usman, Neerav Kharche, Hoon Ryu, Sunhee Lee, Dragica Vasileska, "NEMO 3-D and OMEN: Nanoelectronic modeling tools for advanced semiconductor device studies and their deployment on nanoHUB.org", American Chemical Society meeting, Salt Lake City, Utah, 22-26 March 2009

[I119] Gerhard Klimeck, "Modeling and Simulation Tools for Nanoelectronics", Winter Meeting of the American Association of Physics Teachers, Chicago, USA, Jan 12-16, 2008.

[I118] Gerhard Klimeck, Mathieu Luisier, "From NEMO1D and NEMO3D to OMEN: moving towards atomistic 3-D quantum transport in nano-scale semiconductors", IEEE IEDM, San Francisco, USA, Dec. 15-17, 2008.

[I117] Mathieu Luisier, Gerhard Klimeck, "Full-Band Simulation of Realistic Nanoelectronic Devices at the Atomic Scale", 4th International Workshop on High Performance Computing for Nanoscience and Technology, HPCNano|08, in conjunction with Supercomputing 2008, Purdue University Exhibition Booth, Nov 21, 2008, Austin, TX.

[I116] Gerhard Klimeck, "nanoHUB.org: Future Cyberinfrastructue serving over 75,000 users today", Supercomputing 2008, Purdue University Exhibition Booth, Nov 18, 2008, Austin, TX.

[I115] Gerhard Klimeck, Hoon Ryu, "Contact Block Reduction Method for Ballistic Quantum Transport with Semi-empirical sp3d5s* Tight Binding Band Models.", International Conference on Solid State and Integrated Circuit Technology (ICSICT 2008), Beijing, October 20-23, 2008.

[I114] Gerhard Klimeck, Neerav Kharche, Muhammad Usman, Timothy Boykin, "Multi-Million Atom Simulations of Strain and Electronic Structure with NEMO 3-D", Materials Science and Technology Conference and Exhibition (MS&T), Pittsburgh, October 5-9, 2008.

[I113] Gerhard Klimeck, Michael McLennan, Mark Lundstrom, George Adams III., "nanoHUB.org - future cyberinfrastructure serving over 75,000 users today", IEEE Symposium on Massive Storage Systems and Technologies (MSST), Baltimore, September 22-24, 2008.

[I112] Gerhard Klimeck, Michael McLennan, Mark Lundstrom, George Adams III., "nanoHUB.org - online simulation and more materials for semiconductors and nanoelectronics in education and research", IEEE nano 2008, Arlington, TX, August 18-21, 2008.

[I111] Gerhard Klimeck, representing Committe, "The Next Generation Research Grid: A Path Forward", Presentation to the TeraGrid Science Advisory Board Meeting, TeraGrid 2008, June 9, 2008, Las Vegas.

[I110] Gerhard Klimeck, Michael McLennan, Mark Lundstrom, George Adams III., "nanoHUB.org - serving over 58,000 researchers, educators, and students", Ohio Nanotechnology Summit, Mason, OH, April 10-11, 2008.

[I109] Barbara Fossum, Gerhard Klimeck, Michael McLennan, Mark Lundstrom, George Adams III., "nanoHUB.org - Future Cyberinfrastructure - serving over 60,000 users today", Workshop on Designing cyberinfrastructure to enable US-China collaboration in tobacco research, Beijing, March 28-29, 2008.

[I108] Gerhard Klimeck, "Connecting Scientists Through nanoHUB", National Academy of Sciences E-Journal Summit, March 18, 2008.

[I107] Gerhard Klimeck, Mark Lundstrom, Michael McLennan, George Adams III., "Atomistic Simulation of Realistically Sized Nanodevices Using NEMO 3-D", ICONN 2008, Melbourne, Australia, Feb 25-29, 2008.

[I106] Gerhard Klimeck, Mark Lundstrom, Michael McLennan, George Adams III., "nanoHUB.org: Future Cyberinfrastructure serving over 26,000 users today", NSF CMMI Grantee Conference, Knoxville TN, Jan 7-9, 2008.

[I105] Gerhard Klimeck, "nanoHUB.org: Future Cyberinfrastructure serving over 26,000 users today", thermalHUB Community Planning Workshop, Purdue University, Dec. 10, 2007 .

[I104] Gerhard Klimeck, Mark Lundstrom, Michael McLennan, George Adams III., "nanoHUB.org: Future Cyberinfrastructure serving over 26,000 users today", NSF nanotechnology grantee's meeting, Washington DC, Dec. 3-6, 2007.

[I103] Gerhard Klimeck, "nanoHUB.org: Future Cyberinfrastructure serving over 26,000 users today with online simulations and more", invited software demonstration, BIRS Workshop 07w5057 (Banff International Research Station), Physics-Based Mathematical Models of Low-Dimensional Semiconductor Nanostructures: Analysis and Computation, Banff, Canada, Nov. 18-23 2007.

[I102] Gerhard Klimeck, "Atomistic NanoElectronic Modeling (NEMO): for Predictive Resonant Tunneling Diode Simulation and Disordered 3-D Systems", Plenary / Keynote Address, BIRS Workshop 07w5057 (Banff International Research Station), Physics-Based Mathematical Models of Low-Dimensional Semiconductor Nanostructures: Analysis and Computation, Banff, Canada, Nov. 18-23 2007.

[I101] Gerhard Klimeck, "nanoHPC NEMO: Scaling to Over 23,000 Cores", Supercomputing 2007, Purdue University Exhibition Booth, Nov 13, 2007, Reno, NV.

[I100] Gerhard Klimeck, "nanoHUB.org: Future Cyberinfrastructue serving over 26,000 users today", Supercomputing 2007, Purdue University Exhibition Booth, Nov 13, 2007, Reno, NV.

[I99] Alejandra Magana, Alissa Nedossekina, Gerhard Klimeck, "nano-based education through generation-nano.org", Supercomputing 2007, Education Program to Middle School, High School, and College Teachers, Nov 10, 2007, Reno, NV.

[I98] Gerhard Klimeck, "nanoHUB.org: Future Cyberinfrastructue serving over 26,000 users today", Supercomputing 2007, Education Program to Middle School, High School, and College Teachers, Nov 10, 2007, Reno, NV.

[I97] Gerhard Klimeck, "NanoElectronic MOdeling (NEMO)", Workshop on Excellence in Modeling and Simulation, University of California at Berkeley, Nov. 6, 2007.

[I96] Gerhard Klimeck, "Nanoelectronics: is it a new device or a new material?", Keynote at Project review meeting. Meeting the materials challenges of nano-CMOS electronics. Prof. Asen Asenov, University of Glasgow, Prof. Alexander Shluger, University College London, London, UK, Oct. 22, 2007.

[I95] Gerhard Klimeck, "nanoHUB.org: Future Cyberinfrastructure used by over 24,000 users today", Keynote: International Multi-Symposiums on Computer and Computational Sciences 2007 (IMSCCS|07), The University of Iowa, Iowa City, Iowa, USA, August 13 - 15, 2007.

[I94] Gerhard Klimeck, "nanoHUB, a Fully Operational Science Gateway", Science Gateways TeraGrid Planning Process Workshop, University of Wisconsin Memorial Union, Madison, Wisconsin, June 7, 2007.

[I93] Gerhard Klimeck, "Atomistic Modeling of Nanoelectronic devices", Si nanoelectronics, Leiden, Netherlands, May 21-25, 2007.

[I92] Gerhard Klimeck, "Multi-million Atom Simulations of Strain and Electronic Structure with NEMO 3-D and its Deployment on nanoHUB.org as a Community Code and Service", 2007 Nanomaterials for Defense Applications Symposium, April 23-26, 2007, San Diego CA.

[I91] Mark Lundstrom, J.C. Clark, Gerhard Klimeck, Arvind Raman, "Nanoelectronics: Metrology and Computationn", 2007 International Conference on Frontiers of Characterization and Metrology for Nanoelectronics, March 27-29, 2007, National Institutes of Standards and Technology, Gaithersberg, MD. conference proceedings will be published by AIP in a hardback book.

[I90] Gerhard Klimeck, Michael McLennan, "nanoHUB.org and High Performance Computing", Purdue-Industry High-Performance Computing Workshop, March 20, 2007, Purdue Computing Research Institute (CRI).

[I89] Michael McLennan, Gerhard Klimeck, "Who wants to be a nanoscientist?", After dinner gameshow for the demonstration of nanoHUB capabilities. Forum on the Frontiers in Computational Nanoelectronics February 20-21, 2007, Indianapolis, IN.

[I88] Gerhard Klimeck, "Atomistic Nanoelectronic Modeling", Forum on the Frontiers in Computational Nanoelectronics February 20-21, 2007, Indianapolis, IN.

[I87] Gerhard Klimeck, Michael McLennan, "nanoHUB tutorial - overview, usage scenarios, vision", IEEE International Conference on Nano/Micro Engineered and Molecular Systems (IEEE-NEMS) Jan 16-19, 2007, Bangkok Thailand.

[I86] Mark Lundstrom, Gerhard Klimeck, "The Network for Computational Nanotechnology: Shared Infrastructure for the NNI", NSF Grantees, Conference, Washington, D.C., Dec. 4-6, 2006.

[I85] Michael McLennan, Gerhard Klimeck, "nanoHUB - overview and usage scenarios", FutureTECH Conference Nov 18, 2006, Norfolk State University.

[I84] Gerhard Klimeck, Michael McLennan, "nanoHUB - overview", Supercomputing 2006, Two Presentations in the TeraGrid Booth, Nov 11-17, 2006, Tampa, FL.

[I83] Gerhard Klimeck, "Multi-million Atom Simulations of Strain and Electronic Structure in NEMO 3-D Enabled by HPC and TeraGrid and Deployment on nanoHUB.org", Supercomputing 2006, Presentation in the Purdue Booth, Nov 11-17, 2006, Tampa, FL.

[I82] Gerhard Klimeck, Michael McLennan, Wei Qiao, David Ebert, Rick Kennel, "nanoVIZ Server", Supercomputing 2006, Presentation in the Purdue Booth, Nov 11-17, 2006, Tampa, FL.

[I81] Gerhard Klimeck, Michael McLennan, Mathew Potrawski, "nanoHUB - HUB Technologies: A Fully Operational Collaborative Cyberinfrastructure for Research, Education, and Outreach", Supercomputing 2006, Two Presentations in the Purdue Booth, Nov 11-17, 2006, Tampa, FL.

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[C132] Fabiano Oyafuso, Paul Allmen, Seungwon Lee, Gerhard Klimeck, "Modeling transport through Si nanowires using a nonequilibrium Green function approach", APS March Meeting, Los Angeles, CA, March 21-25, 2005.

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[C127] Fabiano Oyafuso, Paul Allmen, Seungwon Lee, Gerhard Klimeck, "Nonequilibrium Transport in Silicon Nanowires", 2004 MRS Fall Meeting, Boston, MA, Nov. 29 - Dec. 3, 2004.

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[C124] Yun Zheng, Christian Rivas, Roger Lake, Khairul Alam, Timothy Boykin, Gerhard Klimeck, "Electronic Properties of Silicon Nanowires", 10th International Workshop for Computational Electronics (IWCE), Purdue University, West Lafayette, Oct. 24-27, 2004.

[C123] Faisal Saied, Haiying Xu, Mohammed Sayeed, Sebastien Goasguen, Gerhard Klimeck, "Tuning a Nanotechnology Simulator for High Performance: Performance Improvement of the NEMO 3-D Eigenvalue solver", NSF Network for Computational Nanotechnology (NCN), Annual site visit, Student Poster Presentation, Purdue University, West Lafayette, June 24, 2004.

[C122] Olga Lazarenkova, Paul Allmen, Seungwon Lee, Fabiano Oyafuso, Gerhard Klimeck, "The effect of the strain relaxation in InAs/GaAs stacked quantum dots and multiple quantum wells on the Raman spectrum", 12-th International Symposium "Nanostructures: Physics and Technology", June 21-25, 2004 in St Petersburg, Russia.

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[C120] Sebastien Goasguen, Mark Lundstrom, Gerhard Klimeck, "Using I-Light and the Purdue Nanohub Computing Resources to Run Computationally Intensive Codes in Nanotechnologies", I-Light Symposium, IUPUI University Place Conference Center, Indianapolis, March 9, 2004.

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[C119] Paul Allmen, Seungwon Lee, Fabiano Oyafuso, Gerhard Klimeck, Olga Lazarenkova, "Coupled electron and nuclear spin dynamics in InAs quantum dots: impact on single and two-qubit operations", Quantum Dot 2004, Banff, Alberta, Canada, May 10-13, 2004.

[C118] Seungwon Lee, Olga Lazarenkova, Fabiano Oyafuso, Paul Allmen, Gerhard Klimeck, "Effect of Wetting Layers on Strain and Electronic Structures of Self-Assembled Quantum Dots", Dot 2004, Banff, Alberta, Canada, May 10-13, 2004.

[C117] Olga Lazarenkova, Paul Allmen, Seungwon Lee, Fabiano Oyafuso, Gerhard Klimeck, "Atomistic-Level Simulation of the Vibration Spectrum of Quantum Dot Crystals", Quantum Dot 2004, Banff, Alberta, Canada, May 10-13, 2004.

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[C105] Seungwon Lee, Fabiano Oyafuso, Paul Allmen, Gerhard Klimeck, "Numerical surface treatment for finite-extent semiconductor nanostructures", 14th Workshop on Modelling and Simulation of Electron Devices, Barcelona, Spain. October 16-17 2003.

[C104] Gerhard Klimeck, Fabiano Oyafuso, Timothy Boykin, Paul Allmen, Seungwon Lee, Olga Lazarenkova, "Development of a 3-D Nanoelectronic Modeling Tool (NEMO 3-D)", accepted in 14th Workshop on Modelling and Simulation of Electron Devices, Barcelona (Casa Convalescncia) 16, 17 October 2003

[C103] Hans Kosina, Gerhard Klimeck, Michail Nedjalkov, Siegfried Selberherr, "Comparison of Numerical Quantum Device Models", International Conference on Simulation of Semiconductor Processes and Devices (SISPAD 2003), September 3-5, 2003, Boston, MA.

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[C101] Gerhard Klimeck, Gary Yagi, Robert Deen, Michael McAuley, Eric DeJong, Fabiano Oyafuso, "Near Real-Time Parallel Image Processing using Cluster Computers", International Conference on Space Mission Challenges for Information Technology (SMC-IT), Pasadena, CA July 13-16, 2003.

[C100] Fabiano Oyafuso, Gerhard Klimeck, Timothy Boykin, R. Bowen, Paul Allmen, "Study of Strain Boundary Conditions and GaAs Buffer Sizes in InGaAs Quantum Dots", International Workshop on Computational Electronics, Frascati, Rome, Italy, May 25-28, 2003.

[C99] Gerhard Klimeck, Phillip Stout, R. Bowen, "Quantum and semi-classical transport in RTDs using NEMO 1-D", International Workshop on Computational Electronics, Frascati, Rome, Italy, May 25-28, 2003.

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[C93] Gerhard Klimeck, "Transport simulation of precessing spin distribution across semiconductor heterojunctions", Twenty-Five Years Ultra-Small Electronics Research, Larry Cooper Symposium, November 29, 2002, Hapuna Beach, Hawaii.

[C92] Paul Allmen, Gerhard Klimeck, "NEMO: A User-friendly Quantum Device Design Tool", Materials Research Society Meeting, Boston, MA, Dec 1-6, 2002.

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[C1] C. Xie, Gerhard Klimeck, Ce Chen, Daniel Elliott, "Nonlinear Interactions Involving The Real Gaussian Field", Optical Society of America Annual Meeting, 1990.

TECHNICAL REPORTS (36+, STOPPED TRACKING)

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[S190] Gerhard Klimeck, "Mythbusting Scientific Knowledge Transfer with nanoHUB.org", Presentation in Purdue Supercomputing Booth, Supercomputing Conference SC22, Dallas TX, Nov. 14, 2022

[S189] Gerhard Klimeck, "Semiconductor workforce development through immersive simulations on nanoHUB.org", University of Texas At Dallas, TX, Nov. 13, 2022, Host. Prof. VanDerBerghe

[S188] Gerhard Klimeck, "Semiconductor workforce development through immersive simulations on nanoHUB.org", University of Texas Austin, Host Prof. Sanjay Bannerjee, Oct. 28, 2022

[S187] Gerhard Klimeck, "Mythbusting Scientific Knowledge Transfer with nanoHUB.org", SLAC Colloquium, Host Steve Eglash, Oct. 25, 2022

[S186] Gerhard Klimeck, "nanoHUB.org – always "on" New Paradigms in Global Scientific Knowledge Transfer, Publishing, and Assessment", Purdue-Taiwan Student Exchange workshop, June 29, 2022.

[S185] Gerhard Klimeck, Tanya Faltens, Daniel Mejia, Alejandro Strachan, Lynn Zentner, Michael Zentner "Semiconductor workforce development through immersive simulations on nanoHUB.org", Departmental Seminar series at the Advanced Materials Division in Instituto Potosino de Investigación Científica y Tecnológica (IPICYT), San Luis Potosí, Mexico, May 5, 2022, Host. Prof. Braulio Gutierrez Medina

[S184] Gerhard Klimeck, Tanya Faltens, Daniel Mejia, Alejandro Strachan, Lynn Zentner, Michael Zentner, "Semiconductor workforce development through immersive simulations on nanoHUB.org", National Nanotechnology Coordination Office (NNCO) Seminar, April 27, 2023,

[S183] Gerhard Klimeck, "nanoHUB overview", Ohio State University ECE/MSE Seminar, Aril 5, 2023, Host Prof. Wolfgang Windl

[S182] Gerhard Klimeck, "nanoHUB Integration into Semiconductor Education", Air Force Institute of Technology (AFIT), Nov. 3, 2021, Host Prof. Timothy Wolfe

[S181] Gerhard Klimeck, "Challenges at the Frontier of Modeling", Microsystems Exploratory Council, Spring Meeting, April 7-8. Host Dr. George Thompson,

[S180] Muhammad Alam, Joerg Appenzeller, Zhihong Chen, Supriyo Datta, Sumeet Gupta, David Janes, Gerhard Klimeck, Dana Weinstein, Pramey Upadhyaya, Peter Ye,"Purdue Microelectronics/Nanotechnology Webinar", DOE Crane Webinar, Purdue Westgate, May 12, 2021.

[S179] Gerhard Klimeck, "Cohesion & Story Telling - My Recipe", Purdue University, EVPR's FLAIR Program (Faculty Leadership Academy for Interdisciplinary Research), Feb 10, 2020, Host: Prof. Carrie Berger

[S178] Gerhard Klimeck, "The single-atom transistor: How it was created and what it may mean for the future", Ohio State University, Nov. 1, 2019, Host. Prof. Wolfgang Windl

[S177] Gerhard Klimeck, "A Single Atom Transistor and Global Impact on Research and Education through nanoHUB.org", Serbian Academy of Science, Host: Veljiko Milutinovic, Member of Academy, June 17, 2019

[S176] Gerhard Klimeck, "Cohesion & Story Telling - My Recipe", Purdue University, EVPR's FLAIR Program (Faculty Leadership Academy for Interdisciplinary Research), January 28, 2019, Host: Prof. Carrie Berger

[S175] Gerhard Klimeck, "Cohesion & Story Telling - My Recipe", University of Hamburg, Jan. 24, 2019, Host. Prof. Robert Blick

[S174] Gerhard Klimeck, "Bandstructure effects in nano devices – Examples using NEMO5", Silvaco Seminar, promoted and broadcast globally by Silvaco Inc., Dec. 12, 2018

[S173] Gerhard Klimeck, "A Single Atom Transistor - The Ultimate Scaling Limit", Hamburg University, Nov. 27, 2018, Host: Prof. Dr. Robert Blick

[S172] Gerhard Klimeck, Tillmann Kubis, Michael Povolotskyi, James Fonseca, Bozidar Novakovic, Tarek Ameen, James Charles, ChiYi Chen, Yanchen Chu, Junzhe Geng, Xinchen Guo, Kaspar Haume, Yu He, Ganesh Hegde, Hesam Ilatikhameneh, Zhengping Jiang, SungGeun Kim, Daniel Lemus, Daniel Mejia, Kai Miao, Samik Mukherjee, Seung Park, Ahmed Reza, Mehdi Salmani, Prasad Sarangapani, Parijat Sengupta, Saima Sharmin, Yaohua Tan, Archana Tankasala, Daniel Valencia, KuangChung Wang, Evan Wilson, "NEMO5, a Parallel, Multiscale, Multiphysics Nanoelectronics Modeling Tool From Basic Physics to Real Devices and to Global Impact on nanoHUB.org", Korea Institute of Science and Technology (KIST), Seoul, July 9 2018, Host. Dr. Kwang-Reol Lee

[S171] Tillmann Kubis, Michael Povolotskyi, James Fonseca, Bozidar Novakovic, Tarek Ameen, James Charles, ChiYi Chen, Yanchen Chu, Junzhe Geng, Xinchen Guo, Kaspar Haume, Yu He, Ganesh Hegde, Hesameddin Ilatikhameneh, Zhengping Jiang, SungGeun Kim, Daniel Lemus, Daniel Mejia, Kai Miao, Samik Mukherjee, Seung Park, Ahmed Reza, Mehdi Salmani, Prasad Sarangapani, Parijat Sengupta, Saima Sharmin, Yaohua Tan, Archana Tankasala, Daniel Valencia, KuangChung Wang, Evan Wilson, "NEMO5, a Parallel, Multiscale,

Multiphysics Nanoelectronics Modeling Tool From Basic Physics to Real Devices and to Global Impact on nanoHUB.org", Korea Advanced Institute of Science and Technology (KAIST), Daejeon, July 6 2018, Host Prof. Mincheol Shin

[S170] Gerhard Klimeck, "Your Career Choices: A Perspective from 24 years in Industry, National Laboratory, and Academia", Summer Undergraduate Research Fellowship Seminar, June 20, 2018. Host: Dr. Tanya Faltens

[S169] Gerhard Klimeck, "nanoHUB in a Nutshell: Delivering New Paradigms in Education and Research", Undergraduate Research Fellowship Seminar, May 22, 2018. Host: Dr. Tanya Faltens

[S168] Gerhard Klimeck, "NEMO5, a Parallel, Multiscale, Multiphysics Nanoelectronics Modeling Tool From Basic Physics to Real Devices and to Global Impact on nanoHUB.org", Fudan University, July 6 2016, Host: Prof. Prof. Jian Shen and Prof. Jiang Xiao

[S167] Gerhard Klimeck, "NEMO5, a Parallel, Multiscale, Multiphysics Nanoelectronics Modeling Tool From Basic Physics to Real Devices and to Global Impact on nanoHUB.org", Fudan University, Shanghai, China, July 1, 2016

[S166] Gerhard Klimeck, "NEMO5, a Parallel, Multiscale, Multiphysics Nanoelectronics Modeling Tool From Basic Physics to Real Devices and to Global Impact on nanoHUB.org", Behang University, July1, 2016, Host: Prof. Lang Zang

[S165] Gerhard Klimeck, "NEMO5, a Parallel, Multiscale, Multiphysics Nanoelectronics Modeling Tool From Basic Physics to Real Devices and to Global Impact on nanoHUB.org", Peking University, June 27, 2016, Host: Prof. Xiaoyan Liu

[S164] Gerhard Klimeck, "nanoHUB: always ON 24/7", USC/ISI Lectures on Cyberinfrastructure, The USC Information Sciences Institute, Marina Del Rey, CA, Host: Ewa Deelman, June 7, 2016

[S163] Gerhard Klimeck, "NEMO5, a Parallel, Multiscale, Multiphysics Nanoelectronics Modeling Tool From Basic Physics to Real Devices and to Global Impact on nanoHUB.org", Lund University Lecture Series, Lund, Sweden, May 12, 2016

[S162] Gerhard Klimeck, "NEMO5, a Parallel, Multiscale, Multiphysics Nanoelectronics Modeling Tool From Basic Physics to Real Devices and to Global Impact on nanoHUB.org", UCSB Distinguished Lectures 2015-2016, Host: Prof. Mark Rodwell, June 6th,2016

[S161] Gerhard Klimeck, "NEMO5, a Parallel Multiscale, Multiphysics Nanoelectronics Modeling Tool", STARnet ACCEL e-Workshop Series, Host: Prof. Alan Seabaugh, February 24 ,2016

[S160] Gerhard Klimeck, "NEMO5, a Parallel, Multiscale, Multiphysics Nanoelectronics Modeling Tool", TSMC, Host: WilmanTsai, February 29, 2016

[S159] Gerhard Klimeck, "The Single-Atom Transistor: How it was Created and What it May Mean for the Future ", University of Udine, Host. Prof. David Esseni, July 23, 2015

[S158] Gerhard Klimeck, "The Single-Atom Transistor: How it was Created and What it May Mean for the Future and Mythbusting Today's Nanotechnology", Hosts Prof. Gianluca Fiori and Giuseppe Iannacone, July 20, 2015

[S157] Gerhard Klimeck, "NEMO5, a Parallel, Multiscale, Multiphysics Nanoelectronics Modeling Tool", Technical University Vienna, Host Prof. Hans Kosina, June 19, 2015

[S156] Gerhard Klimeck, "Development of the NEMO tool suite: from basic physics to real industrial devices and to global impact on nanoHUB.org", Technical University Munich, Host. Prof. Gerhard Wachutka, June 17, 2015

[S155] Gerhard Klimeck, "NEMO5, a Parallel, Multiscale, Multiphysics Nanoelectronics", University of Duisburg-Essen, Host Dr. Werner Prost, June 12, 2015

[S154] Gerhard Klimeck, "Mythbusting Today´s Nanotechnology", Ruhr-University Bochum, Host Prof. Ulrich Kunze, June 8, 2015

[S153] Gerhard Klimeck, "Talk-run-de mit Ken-nern der Fa-kul-tät", Ruhr-University Bochum, Germany, Host Dr. Robert Grosche, June 5, 2015

[S152] Gerhard Klimeck, "Mythbusting : Today's Nanotechnology & Knowledge Transfer through nanoHUB.org", Purdue University, ECET 321, Host: Prof. Helen McNally. April 21, 2015

[S151] Gerhard Klimeck, Mehdi Salmani-Jelodar, SungGeun Kim, Saumitra Mehrotra, Abhijeet Paul, Hoon Ryu, Sunhee Lee, Yu He, Daniel Lemus, Bozidar Novakovic, Tillmann Kubis, Michael Povolotskyi, "Development of the NEMO Tool Suite From Basic Physics to Real Devices and to Global Impact on nanoHUB.org", Arizona State, Electrical Engineering Advanced Semiconductor Device Class, Host: Prof. Dragica Vasileska, April 20, 2015

[S150] Gerhard Klimeck, "The single-atom transistor: How it was created and what it may mean for the future", ECEGSA - Purdue ECE Graduate student association seminar, March 25, 2015

[S149] Gerhard Klimeck, Michael McLennan, "Elevating nanoHUB to the Next Level: Vision and Status 2014", NSF seminar, Arlington Virginia, Oct 16, 2014

[S148] Gerhard Klimeck, "NEMO5, a Parallel, Multiscale, Multiphysics Nanoelectronics Modeling Tool", Teleseminar to GLOBAL FOUNDRIES, Nov. 19, 2014, Host Dr. Sahu Bhagawan

[S147] Gerhard Klimeck, "Elevating nanoHUB to the Next Level - Vision and Status 2014", eScience workshop, MURPA, Melbourne, Australia, Sept 4th 2014 (remote)

[S146] Gerhard Klimeck, "Mythbusting Klowledge Transfer with nanoHUB.org", Yegor Gaidar Summer Leadership Program July 15, 2014, Burton D. Morgan Center for Entrepreneurship, West Lafayette, IN

[S145] Gerhard Klimeck, "Purdue University: An overview, the home of nanoHUB, and the Klimeck research group", Ruhr University Bochum, Germany, June 27, 2014, Host: Prof. Aydin Sezgin

[S144] Gerhard Klimeck, "Mythbusting Scientific Knowledge Transfer with nanoHUB.org ", Purdue Postdoc Association Keynote address, June 5, 2014, West Faculty Lounge, Purdue Memorial Union, West Lafayette, IN

[S143] Gerhard Klimeck, Michael Povolotskyi, Tillmann Kubis, Jim Fonseca, Bozidar Novakovic, Yu He, Daniel Mejia, Zhengping Jiang, SungGeun Kim, Saumitra Mehrotra, "NEMO5, a Parallel, Multiscale, Multiphysics Nanoelectronics Modeling Tool", Synopsys, Oct 18, 2013, Host: Dr. Victor Moroz

[S142] Gerhard Klimeck, "Atomistic Modeling of Realistic Nanoelectronic Devicesand nanoHUB tools", Philips - Lumileds, Oct 17, 2013, Host: Dr. Paco Leon.

[S141] Gerhard Klimeck, "Mythbusting Scientific Knowledge Transfer on nanoHUB.org", Yegar Gaidar Summer Leadership Program, Purdue University, July 15, 2013, Host: Timothy Peoples, Purdue Research Foundation

[S140] Gerhard Klimeck, "Your Career Choices after Graduate School and The Most-Neglected Item in your Career Development ", Purdue SURF Summer Seminar, July 2, 2013, Host: Vicki Leavitt

[S139] Gerhard Klimeck, "Career Advice Panel", Purdue SURF Summer Seminar, June 17, 2013, Host Vicki Leavitt

[S138] Gerhard Klimeck, "The Ultimate Scaling Limit – A Deterministic Single Atom Transistor", University of Michigan, NNIN-C presentation, Feb 26, 2013, Prof. Najafi

[S137] Gerhard Klimeck, "Web Platforms for Collaborative Research and Education: The Quantifiably Positive nanoHUB Impacts", Washington Philosophical Society, Washington DC, Cosmos Club, Feb 22. 2013, Host. Dr. Larry Millstein.

[S136] Gerhard Klimeck, "nanoHUB", Purdue Presidents Council Back to School Event, Naples , FL, Feb 16, 2013

[S135] Gerhard Klimeck, "Mythbusting Scientific Knowledge Transfer with nanoHUB.org", Ruhr University Bochum, July 22, 2012

[S134] Gerhard Klimeck, "The Single Atom Transistor", Purdue PUGWASH Seminar, November 27 2012

[S133] Gerhard Klimeck, "The single-atom transistor: How it was created and what it might mean for the future", Mentor Graphics, Sponsored Dinner Event, San Jose, CA, Oct. 17, 2012

[S132] Gerhard Klimeck, "Mythbusting Scientific Knowledge Transfer with nanoHUB.org", Ruhr University Bochum, July 23, 2012, Host Prof. Ulrich Kunze

[S131] Gerhard Klimeck, "The single-atom transistor: How it was created and what it might mean for the future", Mentor Graphics, Technology Development Group, Freemont, CA, Oct. 17, 2012

[S130] Gerhard Klimeck, "Band-to-Band Tunneling Transistors", NCN Summer School, Nanoelectronics from the Bottom-Up, July 17, 2012

[S129] Gerhard Klimeck, "nanoHUB.org: Mythbusting Scientific Knowledge Transfer", Monash eScience and Grid Engineering Laboratory, Monash University, Australia, Oct. 5, 2012, (via teleconference)

[S128] Gerhard Klimeck, " Impurities: Atomistic, Multi-Scale, Multi-Physics Modeling of Extended Si Quantum Devices", NCN Summer School, Nanoelectronics from the Bottom-Up, July 17, 2012

[S127] Gerhard Klimeck, "Band to Band Tunneling", 2012 NCN Summer School, Electronics from the Bottom Up, July 16-20, 2012

[S126] Gerhard Klimeck, "Mythbusting Scientific Knowledge Transfer with nanoHUB.org", NCN Summer School, Nanoelectronics from the Bottom-Up, July 16, 2012

[S125] Gerhard Klimeck, "Single Impurities", 2012 NCN Summer School, Electronics from the Bottom Up, July 16-20, 2012

[S124] Gerhard Klimeck, "Your Career Choices after Graduate School and The Most-Neglected Item in your Career Development", Purdue SURF Summer Seminar, June 25, 2012, Host: Vicki Leavitt

[S123] Gerhard Klimeck, "Atomistic Modeling of Realistic Nanoelectronic Devices and nanoHUB tools", Philips Lumiled, June 19, 2012, Host Dr. Paco Leon

[S122] Gerhard Klimeck, "nanoHUB.org powered by HUBzero® – A Platform for Collaborative Research with Quantifiable Impact on Research and Education", University of Michigan, April 27, 2012. Host Prof. Daniel Atkins

[S121] Krishna Madhavan, Gerhard Klimeck, Mihaela Vorvoreanu, Xin Chen, "Interactive large scale data analyses and visualization for learning", Student Learning and Analytics at Michigan Seminar Series. University of Michigan Provost Initiative on Learning Analytics. Ann Arbor, IN., October 19, 2012

[S120] Gerhard Klimeck, Michael Povolotskyi, Tillmann Kubis, Hong-Hyun Park, Sebastian Steiger, Jim Fonseca, Jean Sellier, Seung Park, Yu He, Ganesh Hegde, SungGeun Kim, Mark Rodwell, "The Nanoelectronic Modeling Tool NEMO 5: Capabilities, Validation, and Application to Advanced Transistor Structures", MSD/FENA Teleseminar Series, Dec. 15 2011.

[S119] Gerhard Klimeck, "nanoHUB.org powered by HUBzero® - A Platform for Collaborative Research with Quantifiable Impact on Research and Education", Tuesday, November 22, 2011, Arizona State University, host: Prof. Dragica Vasileska

[S118] Gerhard Klimeck, "Million-Atom Electronic Structure Simulations for Realistically Large Si-Based Quantum Devices", Monday, November 21, 2011, Arizona State University, Host: Prof. Dragica Vasileska

[S117] Gerhard Klimeck, "Modeling of Thermal and Electron Transport in Nano-Scale Devices", University of Duisburg Essen, Oct. 13, 2011, Host: Dr. Werner Prost.

[S116] Gerhard Klimeck, "nanoHUB.org powered by HUBzero® – A Platform for Collaborative Research with Quantifiable Impact on Research and Education", Network Science Center, School of Library and Information Science, Indiana University, Host. Prof. Katy Borner, Sep 12, 2011

[S115] Gerhard Klimeck, "nanoHUB.org powered by HUBzero®: A Platform for Collaborative Research - Mythbusting Scientific Knowledge Transfer", Wright Patterson Air Force Base, Directorate RX, July 15, 2011, Host Dr. Andrey Voevodin

[S114] Gerhard Klimeck, "Your Career Choices after Graduate School and The Most-Neglected Item in your Career Development", Purdue SURF Summer Seminar, June 2, 2011, Host: Vicki Leavitt

[S113] Gerhard Klimeck, "Success Examples and Challenges of Multi-Scale and Multi-Expertise Modeling and Simulations", Department of Energy, Germantown, April 20, 2011, Host: Dr. Harriett Kung, Office of Basic Energy Sciences.

[S112] Gerhard Klimeck, "nanoHUB.org: Impact on Research and Education, Suggested Usage Examples for NSU", Norfolk State University, May 11, 2011, Host Prof. Mikhail Noginov.

[S111] Gerhard Klimeck, "nanoHUB.org - Future Cyberinfrastructure serving over 170,000 users today", NASA JPL, April 1, 2011, Host. Dr. Thomas Cwik.

[S110] Gerhard Klimeck, "Atomistic Modeling and Simulation Tools for Nanoelectronics and their Deployment on nanoHUB.org, serving thousands of users", Universidad National, Department of Chemistry, March 19, 9am, Bogota, Colombia, Catedra lecture to 1,400 students in Bogota and over 200 students nationwide via telecom. Host Prof. Alvaro Duarte Ruiz aduarter[Sat]unal.edu.co

[S109] Gerhard Klimeck, "nanoHUB tutorial", Universidad de los Andes, Department of Electrical Engineering, March 18, 11am, Bogota, Colombia, Host Prof. Alba Avila Bernal

[S108] Gerhard Klimeck, "Atomistic Modeling and Simulation Tools for Nano Transistors", Universidad National, Department of Chemistry, March 17, 11am, Bogota, Colombia, Host Prof. Eduardo Alvarez.

[S107] Gerhard Klimeck, "nanoHUB.org Operation Model", Purdue University, Burton Morgan Entrepreneurial Leadership Academy, Dec. 2, 2010, Host: Candiss Vibbet

[S106] Gerhard Klimeck, "Atomistic Modeling and Simulation Tools for Nanoelectronics and their Deployment on nanoHUB.org", Arizona State University, Nov. 22 2010, Host: Prof. Steven Goodnick

[S105] Gerhard Klimeck, "nanoHUB.org - Future Cyberinfrastructure serving over 150,000 users today", Lawrence Livermore National Laboratory, Nov. 3 2010, Host: Dr. Rob Long

[S104] Gerhard Klimeck, Mathieu Luisier, Rajib Rahman, Seung Park, Hoon Ryu, Sunhee Lee, Neerav Kharche, Lloyd Hollenberg, Sven Rogge, Gabriel Lansbergen, "Atomistic Modeling of Ultra-Scaled Devices", Globalfoundries Workshop on III-V devices for high performance logic, Nov. 2 2010, Host: Dr. Witek Maszara.

[S103] Gerhard Klimeck, "Atomistic Modeling and Simulation Tools for Nanoelectronics and their Deployment on nanoHUB.org", Purdue University, Department of Physics, Sept 10, 2010, Host: Prof. Michael Manfra

[S102] Gerhard Klimeck, "Your Career Choices after Graduate School and The Most-Neglected Item in your Career Development", Purdue SURF Summer Seminar, July 1, 2010, Host: Vicki Leavitt

[S101] Gerhard Klimeck, "Atomistic Modeling of Ultra-Scaled III-V, Si/Ge, Graphene, and Single Impurity Devices", Samasung Advanced Institute of Technology, SAIT, Aug. 16, 2010, Host: Dr. Jai Kwang Shin

[S100] Gerhard Klimeck, "nanoHUB.org / NCN: Future Cyberinfrastructure serving over 90,000 users today & Rappture tool development", University of Rome Tor Vergata, Oct. 12 2009, Host: Prof. Aldo Di Carlo.

[S99] Gerhard Klimeck, "moving towards atomistic 3-D quantum transport in nano-scale semiconductors", University of Rome Tor Vergata, Oct. 12 2009, Host: Prof. Aldo Di Carlo.

[S98] Gerhard Klimeck, "Nanoelectronic Modeling: From Quantum Mechanics and Atoms to Realistic Devices", Ph.D. Short Course, University of Pisa, Oct. 5-9 2009, Host: Prof. Gianluca Fiori. 41 individual lecture elements - approximately 16 hours of lectures. All lectures to be published on nanoHUB.org.

[S97] Gerhard Klimeck, "Your Career Choices after Graduate School and The Most-Neglected Item in your Career Development", Norfolk State University, Graduate Student Seminar, Sept. 21, 2009, Host: Prof. Suely Black.

[S96] Gerhard Klimeck, "Your Career Choices after Graduate School and The Most-Neglected Item in your Career Development", Purdue University, ECE 694 Graduate Seminar Class, Aug. 27, 2009.

[S95] Gerhard Klimeck, "Your Career Choices after Graduate School and The Most-Neglected Item in your Career Development", Purdue SURF Summer Seminar, July 28, 2009, Host: Vicki Leavitt.

[S94] Gerhard Klimeck, "Your Career Choices after Graduate School and The Most-Neglected Item in your Career Development", Purdue SURF Spring Seminar, April 8, 2009, Host: Vicki Leavitt.

[S93] Gerhard Klimeck, "Modeling and Simulation Tools for Nanoelectronics", University of Duisburg-Essen, Germany, 2:30pm, March 18., 2009, Host. Dr. Werner Prost and Prof. Tegude.

[S92] Gerhard Klimeck, "Modeling and Simulation Tools for Nanoelectronics", Ruhr University Bochum, Germany, 10:15am, March 18., 2009, Host. Prof. Ulrich Kunze.

[S91] Gerhard Klimeck, "Quantum Dots 101 and Quantum Dot Lab", Purdue, School of Technology, March 12., 2009, Host. Prof. Helen McNally.

[S90] Gerhard Klimeck, "Introduction to Quantum Dots on nanoHUB.org", Purdue, School of Technology, Oct. 27, 2008, Host. Prof. Helen McNally.

[S89] Gerhard Klimeck, "nanoHUB.org simulation tools ranging from semiconductor device education to nanoelectronic research", MIT, MSD Teleseminar Series, Oct. 9, 2008, Host. Prof. Judy Hoyt.

[S88] Gerhard Klimeck, "nanoHUB.org - Future Cyberinfrastructure serving over 75,000 users today", Purdue-Silicon Valley Symposium, August 26, 2008, Host. Margarita Contreni.

[S87] Gerhard Klimeck, "nanoHUB.org serving over 6,200 simulation users including NanoElectronic MOdeling (NEMO and OMEN)", UT Dallas Seminar, August 22, 2008, Host: Prof. Eric Vogel.

[S86] Gerhard Klimeck, "Atomistic Nanoelectronic Modeling - NEMO and OMEN", NCSA Director's Seminar, NCSA, University of Illinois Urbana Champaign, April 17, 2008, Host. Prof. Thom Dunning.

[S85] Gerhard Klimeck, "Introduction to Quantum Dot Lab", Purdue University, School of Technology, Introduction to nanotechnology Course. march 6th, 2008. Host Prof. Helen McNally.

[S84] Gerhard Klimeck, "Atomistic Modeling of Single Electron Quantum State Control in Silicon using NEMO 3-D", University of New South Wales, Physics Department, Centre for Quantum Electronics, March 3rd, 2008, Host Profs. Michelle Simmons and Bob Clark.

[S83] Gerhard Klimeck, "Atomistic Quantum Transport in Realistically Extended Devices - nanowires and thin bodies", GRC / SRC Technology Transfer e-workshop, Feb. 21, 2008, Host Dr. Kwok Ng.

[S82] Gerhard Klimeck, "Algorithms and Parallelization Approaches for Scaling to 23,000 Processors in Nanoelectronic Modeling (NEMO)", Purdue University SIAM student meeting, Feb 7, 2008. Host Mr. Maxim Naumov

[S81] Gerhard Klimeck, "nanoHUB.org - Future Cyberinfrastructure serving over 26,000 users today", Oak Ridge National Lab, TN, Jan 9, 2008

[S80] Gerhard Klimeck, "Atomistic NanoElectronic MOdeling (NEMO) for Predictive 1D Out-of-Equilibrium Quantum Transport, and Disordered 3D Multi-Million Atom Electronic Structure", Oak Ridge National Lab, TN, Jan 8, 2008

[S79] Gerhard Klimeck, "nanoHUB.org: Future Cyberinfrastructure serving over 26,000 users today", Northwestern University, Dec. 6, 2007

[S78] Gerhard Klimeck, "nanoHUB.org: Future Cyberinfrastructure serving over 26,000 users today", Purdue University, School of Technology Student Seminar, Nov. 15, 2007

[S77] Gerhard Klimeck, "nanoHUB.org: Future Cyberinfrastructure serving over 25,000 users today", Ruhr University Bochum, Institute for Theoretical Electrical Engineering, Oct. 25, 2007, Hosts: Prof. Kunze and Brinkmann

[S76] Gerhard Klimeck, "Engineering at the nanometer scale: Is it a new material or a new device?", Purdue University, Material Science and Engineering Seminar, Oct. 19, 2007, Host: Prof. Edwin Garcia.

[S75] Gerhard Klimeck, "nanoHUB.org: Future Cyberinfrastructure serving over 25,000 users today", Purdue University, Math Graduate Student Seminar, Oct. 19, 2007

[S74] Gerhard Klimeck, "nanoHUB.org: Future Cyberinfrastructure serving over 25,000 users today", Purdue University, Electrical and Computer Engineering Graduate Student Seminar, ECE694, Oct. 18, 2007, Host: Prof. P. Krause

[S73] Gerhard Klimeck, "nanoHUB.org: Future Cyberinfrastructure serving over 25,000 users today", Jet Propulsion Laboratory, Section 388 seminar, Pasadena CA, October 4, 2007. Host: Dr. Paul von Allmen

[S72] Mark Lundstrom, Gerhard Klimeck, "The NCN and the nanoHUB", Lawrence Livermore National Laboratory, April 9, 2007, Host: Dr. Jeff Neaton.

[S71] Michael McLennan, Gerhard Klimeck, "nanoHUB Demo and Usage Scenarios for Education", Purdue University, Electrical and Computer Engineering, EI2G: The ECE Instructional Innovation Group, March 6th, 2007, Host: Dr. Mark Johnsson.

[S70] Gerhard Klimeck, "Atomistic Alloy Disorder in Nanostructures", Purdue University, NCN/INAC Tutorial Lecture Feb. 7, 2007, Host: NCN Student Leadership Council.

[S69] Gerhard Klimeck, Martha Prada, "Electronic Structure of Si/InAs Composite Channels", University of Notre Dame, Electrical Engineering Department Januaray 30, 2007, Host: Prof. Alan Seabaugh.

[S68] Mark Lundstrom, Gerhard Klimeck, Michael McLennan, "Network for Computational Nanotechnology", Semiconductor Research Corporation e-Workshop, Teleseminar, Nov. 17, 2006, Host: Jim Hutchby

[S67] Gerhard Klimeck, "Atomistic Modeling of Ultra-Scaled Si/Ge Devices and Tool Deployment on nanoHUB.org", Samsung Advanced Institute of Technonlogy, Seoul, Korea, October 27, 2006 Host: Dr. Jongsoeb Kim.

[S66] Sebastien Goasguen, Gerhard Klimeck, Renato Figueiredo, Alain Roy, Krishna Madhavan, "The nanoHUB case: Cyberinfrastructure-enabled Virtual Organization", NSF / OCI (Office of Cyberinfrastructure) seminar, presentation to program directors, NSF, Washington DC, Oct 5, 2006. Host: Dr. Miriam Heller.

[S65] Gerhard Klimeck, "Why is Nanotechnology Multidisciplinary? - A perspective of one EE", Purdue Multi-Disciplinary Engineering Program, Purdue Univerisy, Oct. 3, 2006, Host: Prof. Robin Adams

[S64] Michael McLennan, Gerhard Klimeck, "HUB Technologies: A Fully Operational Collaborative Cyberinfrastructure for Research, Education, and Outreach Shared Infrastructure Available for You Today!", Cyber Center Seminar, Purdue University, School of Computer Science, September 25, 2006.

[S63] Gerhard Klimeck, "nanoHUB overview to the MSD/MARCO Center", MIT MSD/MARCO center Teleseminar, Sept 21. 2006, Host: Prof. Judy Hoyd

[S62] Michael McLennan, Gerhard Klimeck, "HUB Technologies: A Fully Operational Collaborative Cyberinfrastructure for Research, Education, and Outreach Shared Infrastructure Available for You Today! ", University wide presentation, Purdue University, Burton Morgan Center for Entrepeneurship, September 6, 2006.

[S61] Michael McLennan, Gerhard Klimeck, "Usage Scenarios of and Vision for nanoHUB", Presentation to the teacher summer workshop initiated from SC05, Purdue University, STEW 322 Host: Krishna Madhavan, July, 12, 2006.

[S60] Michael McLennan, Gerhard Klimeck, "nanoHUB.org: The Computational User Facility Complement to the Birck Nanotechnology Center", Nanotechnology Seminar Series, Purdue University, Birck 1001 June 5, 2006.

[S59] Gerhard Klimeck, Mark Lundstrom, Michael McLennan, Sebastien Goasguen, Krishna Madhavan, "nanoHUB.org online simulation and more - A fully operational Cyberinfrastructure that is transforming how Students learn, Teachers teach and Researchers and Engineers work ", Presentation to the Northwest Indiana Grid Steering committee, representatives of Purdue West Lafayatte, Purdue-Calumet, and Notre Dame. Host Nathan Bohlmann, Chris Hoffmann, Access grid presentation, May 24, 2006.

[S58] Krishna Madhavan, Sebastien Goasguen, Gary Bertoline, Gerhard Klimeck, "Next-generation Cyberinfrastructure for Bridging Discovery and Learning: nanoHUB", Revolutionizing science and education through cyberinfrastructure. Presentation at the Exploratorium Brown Bag Series, San Francisco, CA, May 18, 2006.

[S57] Krishna Madhavan, Sebastien Goasguen, Gary Bertoline, Gerhard Klimeck, "Next-generation Cyberinfrastructure for Bridging Discovery and Learning: nanoHUB", April 11, 2006, 10:00am, NSF ENG Cyberinfrastructure Seminar, National Science Foundation, Washington DC, Host: Dr. Gary Gabriele.

[S56] Gerhard Klimeck, "Computational and Algorithm Challenges for Nanoscience and Nanotechnology", March 1, 2006, 4:00pm, Purdue University, Jointly sponsored by Computing Research Institute (CRI), CSE Spring 2006 Seminar Series, Center for Computational and Applied Mathematics (CCAM), Host: Prof. Dongbin Xiu.

[S55] Gerhard Klimeck, "Bandstructure in Nanoelectronics", Nov. 2, 2005, 10:30am, Purdue University Nanotechnology Tutorial Series.

[S54] Gerhard Klimeck, "Development of a Nanowire Simulator at the Network for Computational Nanotechnologies (NCN)", Sept. 20, 2005, 4:30pm, Gerhard Mercator Universiät Duisburg, Host: Dr. Werner Prost.

[S53] Gerhard Klimeck, "Parallel Computing for Realistic Nanoelectronic Simulations", Sept. 12, 2005, 2:30pm, Purdue University, Nanotechnology Tutorial Series.

[S52] Gerhard Klimeck, "Nano 101 - Quantum Dots", July 20, 2005, 11am, Purdue University, Summer Undergraduate Research Institute (SURI) Host: Prof. Michael Melloch.

[S51] Gerhard Klimeck, Michael McLennan, "CVS Crashcourse", April 6, 9am, 2005, Purdue University, Burton Morgan Entrepreneurship Center, NCN Student Leadership workshop.

[S50] Gerhard Klimeck, "NCN Cyberinfrastrucutre or How can your science software reach thousands of users?", April 6, 2pm, 2005, Purdue University, Burton Morgan Entrepreneurship Center, NCN Student Leadership workshop.

[S49] Gerhard Klimeck, "The Network for Computational Nanotechnology (NCN) or How can your educational modules contain interactive online simulation? ", Feb 28, 2005, National Center for Learning and Teaching in Nanoscale Science and Engineering, Northwestern University, Purdue University, web-based seminar, Host: Prof. Bob Chang.

[S48] Gerhard Klimeck, "The Network for Computational Nanotechnology (NCN)", Feb 28, 11am, 2005, Purdue University, STEW 320, ITaP user forum, Host: Steve Dunlop.

[S47] Gerhard Klimeck, "The Network for Computational Nanotechnology (NCN) and NEMO 1-D transport simulations ", Feb 18, 2005, Morgan State University, Baltimore, Host: Prof. Craig Scott.

[S46] Gerhard Klimeck, Mark Lundstrom, Michael McLennan, Sebastien Goasguen, "The Network for Computational Nanotechnology (NCN) or How can your science software reach thousands of users? ", Feb 17, 2005, NIST, Gaithersburg, Host: Dr. David Seiler.

[S45] Gerhard Klimeck, "NEMO 1-D: The First NEGF-based TCAD Tool and The Network for Computational Nanotechnology", Nov. 4, 2004, Purdue University, EE 694 Graduate Student Seminar, Host: Prof. P. Krause.

[S44] Gerhard Klimeck, Mark Lundstrom, Sebastien Goasguen, "The Network for Computational Nanotechnology Cyber-Infrastructure and Grid Computing for Nanotechnology Exploration and Education", Sept. 21, 2004, Purdue University, IEEE Computer Society, Host: Mr. Greg Veldman.

[S43] Gerhard Klimeck, "Computational Nanoelectronics: Towards Design, Analysis, and Fundamental Limits - Development of the Nanoelectronic Modeling Tool NEMO", Sept. 1, 2004, Walter Schottky Institute, Garching, Munich, Host: Prof. Peter Vogl.

[S42] Gerhard Klimeck, "Computational Nanoelectronics: Towards Design, Analysis, Synthesis, and Fundamental Limits.", August 30, 2004, Gwangju Institute of Technology (GIST), South Korea, Host: Prof. Youngjoo Chung.

[S41] Gerhard Klimeck, "NEMO 1-D: A NEGF-based CAD Tool, Interactive lecture and software demo.", Lecture on June 14, 2004, Summer School: Introduction to Computational Nanotechnology, June 7-18, 2004, Beckman Institute, University of Illinois at Urbana-Champaign, Host: Prof. Umberto Ravaioli.

[S40] Gerhard Klimeck, "Numerical Aspects of NEGF: The Recursive Green Function Algorithm", Lecture on June 14, 2004, Summer School: Introduction to Computational Nanotechnology, June 7-18, 2004, Beckman Institute, University of Illinois at Urbana-Champaign, Host: Prof. Umberto Ravaioli.

[S39] Gerhard Klimeck, "Development of the Nanoelectronic Modeling Tool (NEMO): Towards Design, Analysis, Synthesis, and Fundamental Limits", April 15, 2004, Ball State University, Center for Computational Nanoscience (CCN), Host: Prof. Jin Feng.

[S38] Gerhard Klimeck, "HPC Challenges for NanoElectronic Modeling (NEMO)s", March 5, 2004, Purdue University, Computing Research Institute (CRI) Advisory Group, Host: Prof. Chris Hoffmann.

INVITED SEMINARS (WORK PERFORMED AT JPL) (25 TOTAL)

[S37] Gerhard Klimeck, "Development of NEMO 3-D: Boundary conditions for the electronic structure of finite-extent, embedded semiconductor nanostructures", Feb. 27, 2004, University of Duisburg-Essen, Germany, Host: Dr. Werner Prost.

[S36] Gerhard Klimeck, "Development of NEMO 3-D: Boundary conditions for the electronic structure of finite-extent, embedded semiconductor nanostructures", Feb. 24, 2004, Ruhr-University University Bochum, Germany, Host: Prof. Ulrich Kunze.

[S35] Gerhard Klimeck, "Development of the Nanoelectronic Modeling Tool (NEMO): Towards Design, Analysis, Synthesis, and Fundamental Limits", Feb. 18, 2004, State University of New York, Buffalo, Host: Prof. Vladimir Mitin.

[S34] Gerhard Klimeck, "Computational Nanoelectronics: Towards Design, Analysis, Synthesis, and Fundamental Limits ", July 28, 2003, Purdue University, Host: Prof. Mark Lundstrom.

[S33] Gerhard Klimeck, "Computational Nanoelectronics: Towards Design, Analysis, Synthesis, and Fundamental Limits ", JPL, Division 32 and 38 Seminar, June 18, Host: Dr. Carl Ruoff, Div 32 and 38 Chief Technologist.

[S32] Gerhard Klimeck, "Computational Nanoelectronics: Towards Design, Analysis, Synthesis, and Fundamental Limits ", JPL, Section 381 Noontime seminar, April 10, 2003, Host Jason Hyon, Section 381 Deputy.

[S31] Gerhard Klimeck, "Computational Nanoelectronics: Towards Design, Analysis, Synthesis, and Fundamental Limits ", Dr. Ed Stone Award Outstanding Research Publication Award Lecture, JPL, Feb. 18, 2003, Host: Dr. Tom Prince, JPL Chief Scientist.

[S30] Gerhard Klimeck, "Modeling of Disordered Multimillion Atom Quantum Dot Systems", University of Duisburg, Germany, Nov 13, 2002, Hosts Dr. Werner Prost and Prof. Tegude.

[S29] Gerhard Klimeck, "Modeling of Disordered Multimillion Atom Quantum Dot Systems", Ruhr-University Bochum, Germany, Nov 11, 2002, Host Prof. Ulrich Kunze.

[S28] Gerhard Klimeck, "Development of a Nanoelectronic 3-D (NEMO 3-D) Simulator for Multimillion Atom Simulations and Its Application to Alloyed Quantum Dots ", California State University Northridge, Northridge, CA, March 29, 2002, Host Prof. Nickolas Kioussis.

[S27] Gerhard Klimeck, "Development of a Nanoelectronic 3-D (NEMO 3-D) Simulator for Multimillion Atom Simulations and Its Application to Alloyed Quantum Dots ", Purdue University, West Lafayette, IN, March 20, 2002, Host Prof. Supriyo Datta.

[S26] Gerhard Klimeck, "Development of a Nanoelectronic 3-D (NEMO 3-D) Simulator for Multimillion Atom Simulations and Its Application to Alloyed Quantum Dots ", Notre Dame, South Bend, IN, March 15, 2002, Host Prof. Wolfgang Porod.

[S25] Gerhard Klimeck, "Development of a Nanoelectronic 3-D (NEMO 3-D) Simulator for Multimillion Atom Simulations and Its Application to Alloyed Quantum Dots ", R. G. Herb Memorial Lecture, Physics Dept., University of Wisconsin-Madison, Madison, WI, March 14, 2002, Host Prof. Bob Joynt

[S24] Gerhard Klimeck, "Status of the Nanoelectronic Modeling tool (NEMO 1-D and 3-D) and its planned extension to Spintronics", NTT Central Reaearch Laboratory, Erato Project, Feb 8, 2002, Hosts Dr. Michael Stope and Prof. Tarucha.

[S23] Gerhard Klimeck, "Nanoelectronic Modeling (NEMO): Moving from commercial grade 1-D simulation to prototype 3-D simulation", University of Tokyo, February 8, 2002, Host Prof. Seigo Tarucha.

[S22] Gerhard Klimeck, "Status of the Nanoelectronic Modeling tool (NEMO 1-D and 3-D) and its planned extension to Spintronics", Tokyo Institute of Technology, Feb 6, 2002, Host Prof. Oda.

[S21] Gerhard Klimeck, "Nanoelectronic Modeling (NEMO): Moving from commercial grade 1-D simulation to prototype 3-D simulation", Osaka University, January 30m 2002, Host Prof. Hishiro Hamaguchi.

[S20] Gerhard Klimeck, "Quantum Dot Modeling using NEMO 3-D", JPL, Section 367 Seminar, February 6, 2001, 126-346, 3p.m.

[S19] Gerhard Klimeck, "Quantum Dot Modeling using NEMO 3-D", University of California Riverside, Department of Electrical and Computer Engineering, Dec 8, 2000.

[S18] Gerhard Klimeck, R. Bowen, Tom Cwik, Timothy Boykin, "A Prototype of a 3-D Nanoelectronic Modeling Tool (NEMO-3D)", Notre Dame, South Bend, IN, April 12, 2000.

[S17] Gerhard Klimeck, R. Bowen, Tom Cwik, Timothy Boykin, "A Prototype of a 3-D Nanoelectronic Modeling Tool (NEMO-3D)", General Dynamics Information Systems, Minneapolis, MN, March 22, 2000.

[S16] Gerhard Klimeck, R. Bowen, Tom Cwik, "Simulator Development for Nanoelectronic and Electromagnetic Devices", National Reconnaissance Office, Chantilly, VA, March 31, 1999.

[S15] Gerhard Klimeck, R. Bowen, Timothy Boykin, Fabiano Oyafuso, Tom Cwik, Carlos Salazar-Lazaro, Adrian Stoica, "The Nanoelectronic Modeling Tool NEMO and its extension to High Performance Computing", MIT Lincoln Laboratory, Lexington, MA. Dec. 2, 1998.

[S14] Gerhard Klimeck, R. Bowen, Timothy Boykin, Fabiano Oyafuso, Tom Cwik, Carlos Salazar-Lazaro, Adrian Stoica, "The Nanoelectronic Modeling Tool NEMO and its extension to High Performance Computing", Gerhard Mercator University Duisbug, Nov 25, 1998.

[S13] Gerhard Klimeck, R. Bowen, Timothy Boykin, Fabiano Oyafuso, Tom Cwik, Carlos Salazar-Lazaro, Adrian Stoica, "The Nanoelectronic Modeling Tool NEMO and its extension to High Performance Computing", Ruhr University Bochum, Lehrstuhl fuer Werkstoffe der Elektrotechnik, Nov 23, 1998.

Work Performed at UTD/TI (9 Total)

[S12] Gerhard Klimeck, "NEMO: A 1-D Heterostructure Design Tool", Center for Integrated Space Microsystems, Jet Propulsion Laboratory, Pasadena, CA, April 24, 1998.

[S11] Gerhard Klimeck, "NEMO: A General Purpose 1-D Quantum Device Simulator", November 21, 1997, Intel Corporation, Portland, OR.

[S10] Gerhard Klimeck, "NEMO: A General Purpose 1-D Quantum Device Simulator", October 6, 1997, Jet Propulsion Laboratory, Pasadena, CA.

[S9] Gerhard Klimeck, "NEMO: Quantitative RTD Simulation", Hitachi Ltd., Cambridge, UK, July 21, 1997.

[S8] Gerhard Klimeck, Dejan Jovanovic, "NEMO: Quantum Device Modeling (1-D, 2-D and 3-D)", Ultra Electronics Program Review, Estes Park, CO, Oct. 6-10, 1996.

[S7] Gerhard Klimeck, Roger Lake, R. Bowen, Daniel Blanks, Manhua Leng, Chenjing Fernando, Dejan Jovanovic, Paul Sotirelis, "NEMO: A General Purpose Quantum Device Simulator", IMEC, Leuven, Belgium, May 31, 1996

[S6] Gerhard Klimeck, Roger Lake, R. Bowen, Daniel Blanks, Manhua Leng, Chenjing Fernando, Dejan Jovanovic, Paul Sotirelis, "NEMO: A General Purpose Quantum Device Simulator", Ruhr-Universität Bochum, Germany, May 30, 1996.

[S5] Gerhard Klimeck, Roger Lake, R. Bowen, Daniel Blanks, Manhua Leng, Chenjing Fernando, Dejan Jovanovic, Paul Sotirelis, "NEMO: A General Purpose Quantum Device Simulator", Universität Duisburg, Germany, May 28, 1996.

[S4] Gerhard Klimeck, Roger Lake, R. Bowen, Daniel Blanks, Manhua Leng, Chenjing Fernando, Dejan Jovanovic, Paul Sotirelis, "NEMO: A General Purpose Quantum Device Simulator", Texas Instruments Research Colloquium, Dallas, TX, May 23, 1996.

Work Performed in Graduate School (3 Total)

[S3] Gerhard Klimeck, Roger Lake, Garnett Bryant, Guanlong Chen, Supriyo Datta, R. Bowen, William Frensley, "Elektronen-Elektronen und Elektronen-Phononen Wechselwirkungen in der Nanotechnologie", Ruhr-Universität Bochum, Germany, Dec. 20, 1994.

[S2] Gerhard Klimeck, Roger Lake, Garnett Bryant, Guanlong Chen, Supriyo Datta, R. Bowen, William Frensley, "Elektronen-Elektronen und Elektronen-Phononen Wechselwirkungen in der Nanotechnologie", Universität Duisburg, Germany, Dec. 15, 1994.

[S1] Gerhard Klimeck, Roger Lake, Supriyo Datta, "Erhöhter Stromfluss durch Streuprozesse oder überraschende Ergebnisse im Bereich der Quantenbauelemente", Ruhr-Universität Bochum, Germany, Jan. 8, 1993.

PROGRAM REVIEWS (TOTAL 98, STOPPED TRACKING 2015)

I stopped tracking program reviews in 2015.

Work Performed at Purdue (67 total)

The NCN/nanoHUB site visit happened every year since 2004 and I spent about 1-2 months preparing for that including creating the annual reports)

[R98] Jim Fonseca, Gerhard Klimeck, "NEMO5 on Blue Waters: A Flexible Package for Nanoelectronics Modeling Problems", Blue Waters Symposium, Sunriver, OR, May, 2015

[R97] Tao Chu, Hesameddin Ilatikhameneh, Rajib Rahman, Gerhard Klimeck, zhihong chen, "Field Controlled Dynamic Bandgap", LEAST annual review, South Bend, IN, 2014

[R96] Hesameddin Ilatikhameneh, Bozidar Novakovic, Yaohua Tan, zhihong chen, Joerg Appenzeller, Rajib Rahman, Gerhard Klimeck, "Atomistic Modeling of 2D Material Based Steep Subthreshold Field Effect Transistors", LEAST annual review, South Bend, IN, 2014

[R95] Rifat Ferdous, Yuling Hsueh, Rajib Rahman, Gerhard Klimeck, "Atomistic Modeling of Disordered Silicon Quantum Dots", ARO/LPS Quantum computing program review, Washington DC, Aug 11-15, 2014

[R94] Rajib Rahman, Yuling Hsueh, Yu Wang, Archana Tankasala, Rifat Ferdous, Lloyd Hollenberg, Gerhard Klimeck, "Components of atomistic modeling for donor devices", ARO/LPS Quantum computing program review, Washington DC, Aug 11-15, 2014

[R93] Gerhard Klimeck, "Elevating nanoHUB to the Next Level: Project Overview", NCN/nanoHUB reverse Site visit, Washington DC, Feb 22, 2013

[R92] Gerhard Klimeck, "Elevating nanoHUB to the Next Level: Data Proposal", NCN/nanoHUB reverse Site visit, Washington DC, Feb 22, 2013

[R91] Michael Povolotskyi, Tillmann Kubis, Jim Fonseca, Gerhard Klimeck, "Advanced Quantum Device Simulation using NEMO5", Semiconductor Research Corporation Review, Santa Barbara, CA, April 8 - 11, 2013

[R90] Zhengping Jiang, Yu He, Kai Miao, Yaohua Tan, Michael Povolotskyi, Tillmann Kubis, Gerhard Klimeck, "Quantum Transport in Tunneling Field Effect Transistors", Nanoelectronic Research Initiative (NRI) review, MIND center (Midwest Institute for Nanoelectronics Discovery), Notre Dame, Aug. 15, 2012

[R89] Jim Fonseca, Tillmann Kubis, Michael Povolotskyi, Jean Sellier, Gerhard Klimeck, "Advanced Simulations of Nanoelectronic Devices with NEMO5", Semiconductor Research Corporation Review, Santa Barbara, Ca, April, 2012

[R88] Gerhard Klimeck, "Quantum Simulation of Advanced Transistors", MSD / FCRP All hands meeting, Stanford University, Pre-review March 1, full review May 5-6, 2012.

[R87] Gerhard Klimeck, "Preparation Meeting, Technology Transfer for a proposed STC", UCSB, Oct. 5-6, 2012

[R86] Gerhard Klimeck, "Advanced Quantum Device Simulation using NEMO5", SRC Annual Executive Review, Ronler Acres, Intel Oregon, Feb. 2-3, 2012.

[R85] Gerhard Klimeck, "Technology Transfer for a proposed STC", UCSB, Oct. 24-26, 2012

[R84] Gerhard Klimeck, "Advanced Quantum Device Simulation using NEMO5", SRC Program Review, Urbana Champaign, Aug. 31, 2011.

[R83] Gerhard Klimeck, "3D Quantum Transport Modeling", MIND - Annual Review Meeting, (Midwest Institute for Nanoelectronics Discovery), Notre Dame, Aug. 17-18, 2011.

[R82] Gerhard Klimeck, "Quantum Simulation of Advanced Transistors", MSD / FCRP All hands meeting, Stanford University, Pre-review March 7-8, full review May 10-11, 2011.

[R81] Gerhard Klimeck, "HUBzero: Future Sociology and Cybertechnology that empowers over 170,000 Annual Users in Research, Education, and Industry Today", NCN all hands meeting, Feb. 10-11.

[R80] Hoon Ryu, Sunhee Lee, Zhengping Jiang, Yui-Hong Tan, Michael Povolotskyi, Neerav Kharche, Mark Eriksson, Timothy Boykin, Gerhard Klimeck, Bent Weber, Martin Fuechsle, Jill Miwa, Suddhasatta Mahapatra, W. Lim, H. Yang, N. Lai, F. Mohiyaddin, Andrea Morello, Andrew Dzurak, Michelle Simmons, Lloyd Hollenberg, "Nanoelectronic Modeling (NEMO) for High Fidelity Simulation of Solid-State Quantum Computing Gates", NSA / IARPA / ARO Quantum Computing Technology Workshop, Denver, August 11-12, 2011.

[R79] Hoon Ryu, Sunhee Lee, Zhengping Jiang, Yui-Hong Tan, Michael Povolotskyi, Neerav Kharche, Mark Eriksson, Timothy Boykin, Gerhard Klimeck, Bent Weber, Martin Fuechsle, Jill Miwa, Suddhasatta Mahapatra, Wee Lim, H. Yang, N. Lai, F. Mohiyaddin, Andrea Morello, Andrew Dzurak, Michelle Simmons, Lloyd Hollenberg, "Nanoelectronic Modeling (NEMO) for High Fidelity Simulation of Solid-State Quantum Computing Gates", NSA / IARPA / ARO Quantum Computing Technology Workshop, Denver, August 16-17, 2011

[R78] Gerhard Klimeck, Mathieu Luisier, "3D Quantum Transport Modeling", NRI Annual Review, MIND, Gaithersburg, Oct 27, 2010.

[R77] Gerhard Klimeck, Hoon Ryu, Sunhee Lee, Rajib Rahman, Seung Park, Neerav Kharche, Zhengping Jiang, Timothy Boykin, Lloyd Hollenberg, Gabriel Lansbergen, Sven Rogge, Bent Weber, Michelle Simmons,

"Nanoelectronic Modeling (NEMO) for High Fidelity Simulation of Solid-State Quantum Computing Gates", NSA / IARPA / ARO Quantum Computing Technology Workshop, Minneapolis, August 19-20, 2010.

[R76] Gerhard Klimeck, Mathieu Luisier, "3D Quantum Transport Modeling", MIND - Annual Review Meeting, (Midwest Institute for Nanoelectronics Discovery), Notre Dame, Aug. 10-11, 2010.

[R75] Gerhard Klimeck, "NCN Director's Overview", NCN annual review, April 28-29, 2010.

[R74] Gerhard Klimeck, "Quantum Simulation of Advanced Transistors", MSD / FCRP All hands meeting, Stanford University, Pre-review March 1, full review May 5-6, 2010.

[R73] George Adams III., Rick Kennel, Gerhard Klimeck, Michael McLennan, Debbie Perouli, Mehdi Salmani-Jelodar, "Instant on Computing", Strategic Technologies for CyberInfrastructure STCI and Software Development for CI (SDCI) PI Meeting on January 28-29, 2010 at NSF in Arlington, Virginia

[R72] Gerhard Klimeck, "Cyber-Enabled Knowledge Transfer", NSF STC proposal site visit, Norfolk State University, Oct. 26, 2009.

[R71] Gerhard Klimeck, "Knowledge Transfer using nanoHUB.org", Norfolk State University, NSF STC proposal dry run and team reaview Sept. 21, 2009.

[R70] Gerhard Klimeck, Hoon Ryu, Sunhee Lee, Rajib Rahman, Benjamin Haley, Seung Park, Neerav Kharche, Zhengping Jiang, Timothy Boykin, Cameron. Wellard, Lloyd Hollenberg, Gabriel Lansbergen, Sven Rogge, Bent Weber, Michelle Simmons, "Nanoelectronic Modeling (NEMO) for High Fidelity Simulation of Solid-State Quantum Computing Gates", NSA / IARPA / ARO Quantum Computing Technology Workshop, Minneapolis, August 21-22, 2009.

[R69] Gerhard Klimeck, Mathieu Luisier, "3D Quantum Transport Modeling", MIND - Annual Review Meeting, (Midwest Institute for Nanoelectronics Discovery), Notre Dame, Aug. 20, 2009.

[R68] Gerhard Klimeck, "Full 3-D quantum transport modeling of realistically extended devices", SRC - Semiconductor Research Corporation, Annual Review Austin, Tx, June 24, 2009.

[R67] Michael McLennan, Gerhard Klimeck, "nanoHUB and HUBzero overview and demo", NCN annual review, June 17-18, 2009.

[R66] Gerhard Klimeck, "NCN Director's Overview", NCN annual review, June 17-18, 2009.

[R65] Gerhard Klimeck, "Software Customization and Deployment on the nanoHUB", MSD / FCRP All hands meeting, Stanford University, May 4-5, 2009.

[R64] Gerhard Klimeck, Neerav Kharche, Rajib Rahman, Benjamin Haley, Timothy Boykin, Cameron. Wellard, Lloyd Hollenberg, Gabriel Lansbergen, Sven Rogge, "Nanoelectronic Modeling (NEMO) for High Fidelity Simulation of Solid-State Quantum Computing Gates", NSA / DTO / ARO Quantum Computing Technology Workshop, Atlanta, August 11-13, 2008.

[R63] Gerhard Klimeck, Michael McLennan, "nanoHUB overview and demo", NCN annual review, June 26-27, 2008.

[R62] Gerhard Klimeck, Diane Beaudoin, "nanoHUB metrics, statistics, and assessment", NCN annual review, June 26-27, 2008.

[R61] Gerhard Klimeck, "Full 3-D quantum transport modeling of realistically extended devices", SRC - Semiconductor Research Corporation, Annual Review, Austin, Tx, June 24, 2008.

[R60] Gerhard Klimeck, "3D Atomistic Modeling. from NEMO to OMEN", MIND - Kickoff and Review Meeting, (Midwest Institute for Nanoelectronics Discovery), Notre Dame, June 4-5th, 2008.

[R59] Gerhard Klimeck, Michael McLennan, George Adams III., Mark Lundstrom, "nanoHUB - future cyberinfrastructure serving over 62,000 users today", Birck Nanotechnology Research Review 2008, April 14th, 2008.

[R58] Gerhard Klimeck, Michael McLennan, "nanoHUB overview", NCN all hands meeting, External Advisory Board meeting, April 2nd and 3rd, 2008.

[R57] Gerhard Klimeck, "Software Customization and Deployment on the nanoHUB", MSD / FCRP All hands meeting, Stanford University, March 4, 2008.

[R56] Gerhard Klimeck, Neerav Kharche, Rajib Rahman, Srikant Srinivasan, Leonid Rokhinson, Martha Prada, Benjamin Haley, Timothy Boykin, Cameron. Wellard, Lloyd Hollenberg, Gabriel Lansbergen, Sven Rogge, "Nanoelectronic Modeling (NEMO) for High Fidelity Simulation of Solid-State Quantum Computing Gates", NSA / DTO / ARO Quantum Computing Technology Workshop, Minneapolis, August 12-17, 2007.

[R55] Gerhard Klimeck, "Full 3-D quantum transport modeling of realistically extended devices", SRC - Semiconductor Research Corporation, Annual Review, Durham, NC, June 26, 2007.

[R54] Gerhard Klimeck, Michael McLennan, "nanoHUB overview and demo", NCN annual review, June 19-21, 2007.

[R53] Gerhard Klimeck, Michael McLennan, "nanoHUB overview, metrics, and plans", NCN all hands meeting, External Advisory Board meeting, April 4rd and 5th, 2007.

[R52] Gerhard Klimeck, Martha Prada, Neerav Kharche, Rajib Rahman, Timothy Boykin, Seungwon Lee, Paul Allmen, "Nanoelectronic Modeling (NEMO) for High Fidelity Simulation of Solid-State Quantum Computing Gates", LPS / ARO Site visit to University of Wisconsin, Madison, Sept. 19, 2006.

[R51] Gerhard Klimeck, Michael McLennan, "nanoHUB overview and Usage Scenarios", Purdue University, Discovery Park Advisory Council Meeting, September 15, 2006.

[R50] Gerhard Klimeck, Martha Prada, Neerav Kharche, Rajib Rahman, Timothy Boykin, Seungwon Lee, Paul Allmen, "Nanoelectronic Modeling (NEMO) for High Fidelity Simulation of Solid-State Quantum Computing Gates", NSA / ARO Quantum Computing Technology Workshop, Atlanta, August 14-16, 2006.

[R49] Gerhard Klimeck, Michael McLennan, "Full 3-D quantum transport modeling of realistically extended devices ", SRC - Semiconductor Research Corporation, Annual Review Durham, NC, June 26-28, 2006.

[R48] Gerhard Klimeck, Michael McLennan, "nanoHUB overview", NCN annual review, June 20-22, 2006.

[R47] Gerhard Klimeck, Michael McLennan, "nanoHUB overview", NCN all hands meeting, External Advisory Board meeting, April 3rd and 4th, 2006.

[R46] Gerhard Klimeck, Mark Lundstrom, Michael McLennan, Sebastien Goasguen, Krishna Madhavan, "The NCN cyber infratructure strategic plan", NCN advisory board meeting, Purdue University, Feb 6 and 7th, 2006.

[R45] Gerhard Klimeck, Michael McLennan, "nanoHUB overview", NCN advisory board meeting, Purdue University, Feb 6 and 7th, 2006.

[R44] Gerhard Klimeck, Mark Lundstrom, Michael McLennan, Sebastien Goasguen, Krishna Madhavan, "The nanoHUB: a demo", NCN advisory board meeting, Purdue University, Feb 6 and 7th, 2006.

[R43] Gerhard Klimeck, Mark Lundstrom, Michael McLennan, Sebastien Goasguen, Neerav Kharche, Marek Korkusinski, Jing Wang, Timothy Boykin, Fabiano Oyafuso, Paul Allmen, Seungwon Lee, "The NCN: science, simulation, and cyber services and Transport in Si Nanowires", SRC Review, The New York Center for Advanced Interconnect Science and Technology (NYCAIST), Packaging / Interconnect and BEP Fall Review, October 2-6, 2005, University at Albany-SUNY, Albany Nanotech Campus, NanoFab 300S.

[R42] Gerhard Klimeck, Paul Allmen, Rajib Rahman, Neerav Kharche, Timothy Boykin, Seungwon Lee, Fabiano Oyafuso, "Nanoelectronic Modeling (NEMO) for High Fidelity Simulation of Solid-State Quantum Computing Gates", NSA / ARDA / ARO Quantum Computing Technology Workshop, Tampa, FL, August 22-26, 2005.

[R41] Mark Lundstrom, Jing Wang, Anisur Rahman, Gerhard Klimeck, "NEGF Transistor Simulations", SRC Modeling and Simulation / Compact Modeling Research Review, June 27-29, 2005, Research Triangle Park, NC

[R40] Gerhard Klimeck, "Network for Computational Nanotechnology and Nanowire Simulation", SRC Modeling and Simulation / Compact Modeling Research Review, June 27-29, 2005, Research Triangle Park, NC

[R39] Gerhard Klimeck, "NCN Infrastructure Development", Network for Computational Nanotechnology (NCN), NSF Site visit, Jun 21-22, 2005.

[R38] Gerhard Klimeck, "HPC and Visualization for multimillion atom simulations", Network for Computational Nanotechnology (NCN), NSF Site visit, Jun 21-22, 2005.

[R37] Gerhard Klimeck, Timothy Boykin, Mark Eriksson, Mark Friesen, Susan Coppersmith, Fabiano Oyafuso, Paul Allmen, Seungwon Lee, K. Whaley, "Nanoelectronic Modeling (NEMO) for High Fidelity Simulation of Solid-State Quantum Computing Gates", NSA / ARDA / ARO Quantum Computing Technology Workshop, Orlando, FL, August 16-20, 2004.

[R36] Sebastien Goasguen, Marek Korkusinski, Michael McLennan, Gerhard Klimeck, Mark Lundstrom, "The nanoHUB a TeraGrid Science Gateway", TeraGrid Grid Infrastructure Group Review Argonne National Lab, IL, November 17-19, 2004.

[R35] Gerhard Klimeck, "Top-Down Approaches: 1) Tight binding, 2) System Synthesis, 3) Software Infrastructure", DARPA, PROM kickoff meeting, July 18-19, 2004, California Institute of Technology.

[R34] Anisur Rahman, Mark Lundstrom, Gerhard Klimeck, "Bandstructure effects in Ultra-thin Body MOSFETs", SRC Research Annual Review, June 30, 2004.

[R33] Gerhard Klimeck, "NCN Computational Research Overview", Network for Computational Nanotechnology (NCN), NSF Site visit, Jun 24-25, 2004.

[R32] Gerhard Klimeck, "NCN Infrastructure Development", Network for Computational Nanotechnology (NCN), NSF Site visit, Jun 24-25, 2004.

Work Performed at JPL (9 total)

[R31] Paul Allmen, Seungwon Lee, Fabiano Oyafuso, Olga Lazarenkova, Gerhard Klimeck, Timothy Boykin, Mark Eriksson, Susan Coppersmith, Mark Friesen, "Empirical Atomic Level Simulations for QC Applications", ARDA Kickoff Meeting, Madison, WI, June 3, 2004.

[R30] Gerhard Klimeck, Timothy Boykin, Mark Eriksson, Mark Friesen, Susan Coppersmith, Fabiano Oyafuso, Paul Allmen, Seungwon Lee, K. Whaley, "Nanoelectronic Modeling (NEMO) for High Fidelity Simulation of Solid-State Quantum Computing Gates", NSA / ARDA / ARO Quantum Computing Technology Workshop, Nashville, TN, August 18-22, 2003.

[R29] Gerhard Klimeck, Fabiano Oyafuso, E. Tisdale, Hook Hua, R. Bowen, "Development of a Parallel Eigensystem Solver for Beowulf Clusters", Oct 31 2002, JPL ESTO-CT program review.

[R28] Gerhard Klimeck, Akos Czikmantory, Hook Hua, "WIGLAF – A Web Interface Generator and Legacy Application Facade", Oct 31 2002, JPL ESTO-CT program review.

[R27] Gerhard Klimeck, Timothy Boykin, Fabiano Oyafuso, Paul Allmen, "Nanoelectronic Modeling (NEMO) for High Fidelity Simulation of Solid-State Quantum Computing Gates", NSA / ARDA / ARO Quantum Computing Technology Workshop, Nashville, TN, August 19-23, 2002.

[R26] Nikzad Toomarian, R. Bowen, Gerhard Klimeck, "Quantum Dot Modeling – Development of a Bottom-Up Nanoelectronic Modeling Tool", May 9, 2001, JPL CISM (Center for Integrated Space Microelectronics) zero-base review of RCT (Revolutionary Computing Technologies) program.

[R25] R. Bowen, Gerhard Klimeck, "Quantum Dot Modeling – Development of a Bottom-Up Nanoelectronic Modeling Tool", September 2000, JPL CISM (Center for Integrated Space Microelectronics) review of RCT (Revolutionary Computing Technologies) program.

[R24] R. Bowen, Gerhard Klimeck, "Quantum Dot Modeling – Development of a Bottom-Up Nanoelectronic Modeling Tool", August 1 2000, JPL CISM (Center for Integrated Space Microelectronics) review of RCT (Revolutionary Computing Technologies) program.

[R23] R. Bowen, Gerhard Klimeck, "3-D Quantum Device Simulator Development", March 18. 1999, JPL CISM (Center for Integrated Space Microelectronics) review of RCT (Revolutionary Computing Technologies) program

Work Performed at UTD/TI (22 total)

[RR1-R22] The National Reconnaissance Office, sponsor of the NEMO program, required a quarterly program review. Prof. David Ferry (ASU), Prof. George Haddad (U. of Michigan), and Dr. Harold Grubin (SRA) were hired as scientific reviewers by the program sponsor. In addition, program managers from other agencies such as ONR, DARPA, and NSA were typically present. The reviews were generally held in the Central Research Lab of Texas Instruments or at the DFW Hilton. Individual presentations listed below lasted typically 25-45 minutes.

[R22] Gerhard Klimeck, "NanoElectronic MOdeling-Software Development Approach", Dec., 1997.

[R21] Gerhard Klimeck, "Program Status, Activities Overview", May 19, 1997.

[R20] Gerhard Klimeck, "Software Development – Theory",

[R19] Gerhard Klimeck, "Software Demo", May 19, 1997.

[R18] Daniel Blanks, Gerhard Klimeck, "Software / Interface Development", 1996

[R17] Gerhard Klimeck, "Test Matrix Results", Nov., 1996.

[R16] NEMO DC, "NEMO Software Summary", May, 1996.

[R15] NEMO DC, "NEMO Software Tutorial" (3 hours)", May, 1996.

[R14] Gerhard Klimeck, "NEMO: Software Development", Feb. 7, 1996.

[R13] Gerhard Klimeck, "NEMO: GUI Development", Feb. 7, 1996.

[R12] R. Bowen, Gerhard Klimeck, "Multiband Simulations", Feb. 7, 1996.

[R11] Gerhard Klimeck, "GUI and Theory Interaction - A Dynamic Design", October 11, 1995.

[R10] Gerhard Klimeck, "NEGF Code Development", October 11, 1995.

[R9] Gerhard Klimeck, R. Bowen, "Multiband Simulation Results", October 11, 1995.

[R8] Gerhard Klimeck, William Frensley, Chenjing Fernando, R. Bowen, "Non-Equilibrium Green Function Approach – Software Development", June 27, 1995.

[R7] R. Bowen, Gerhard Klimeck, William Frensley, "Multiband Simulations", June 27, 1995.

[R6] Chenjing Fernando, Gerhard Klimeck, William Frensley, "Polar Optical Phonon Scattering Simulations", June 27, 1995.

[R5] Gerhard Klimeck, William Frensley, Chenjing Fernando, R. Bowen, "Non-Equilibrium Green Function Approach – Software Development", Feb. 23, 1995.

[R4] Gerhard Klimeck, William Frensley, Chenjing Fernando, R. Bowen, "Non-Equilibrium Green Function Approach – Software Development", Feb. 23, 1995.

[R3] William Frensley, Gerhard Klimeck, Chenjing Fernando, R. Bowen, "Non-Equilibrium Green Function Approach – Software Development", fall 1994.

[R2] William Frensley, Gerhard Klimeck, Chenjing Fernando, R. Bowen, "Non-Equilibrium Green Function Approach – Software Development", summer 1994.

[R1] William Frensley, Gerhard Klimeck, Chenjing Fernando, R. Bowen, "Non-Equilibrium Green Function Approach – Software Development", spring 1994.

TECHNICAL BRIEFINGS (2003-2014, RESTARTED DOCUMENTING IN 2021, SPECIFICALLY WITH ONLINE RECITATIONS FOR FACULTY MEMBERS)

The technical briefing list has been started in December 2003, to account for various Technical Briefings given to possible sponsors or partners of the NCN. I stopped tracking in 2014 and restarted in 2021 as we started online recitation sessions for faculty members globally.

[B111] Briefing to Microsoft, Jan 13, 2023
[B110] Briefing to AMD, Jan 13, 2023
[B109] Briefing to AMD, Nov. 19, 2023
[B108] Briefing to Synopsis, "Semiconductor workforce development through immersive simulations on nanoHUB.org", Nov. 11, 2022
[B107] Briefing to Cadence, "nanoHUB", Oct. 24, 2022
[B106] Gerhard Klimeck, Briefing to AMD on nanoHUB. Oct. 14, 2022
[B105] **Briefing to Secretary of State Anthony Blinken and Secretary of Commerce Gina M. Raimondo, Gerhard Klimeck "Semiconductor Device Modeling", Purdue University, Sept. 13, 2022**
[B104] Briefing to Cadence representatives, David Junkin, "nanoHUB", Sept. 8, 2022
[B103] Briefing to Cadence representatives, "nanoHUB", August. 30, 2022
[B102] Briefing to Director of Engineering NSF. June 2, 2022.
[B101] Gerhard Klimeck, "MOSFETs", nanoHUB Online Recitation Series for Semiconductor Education and Workforce Development, https://nanohub.org/events/details/2176 , https://nanohub.org/resources/36071 May 25, 2022.
[B100] Gerhard Klimeck, "MOS Capacitors", nanoHUB Online Recitation Series for Semiconductor Education and Workforce Development, https://nanohub.org/events/details/2175 , https://nanohub.org/resources/36070 . May 16, 2022.
[B99] Gerhard Klimeck, "Bipolar Junction Transistors", nanoHUB Online Recitation Series for Semiconductor Education and Workforce Development, https://nanohub.org/events/details/2174, https://nanohub.org/resources/36069 May 11, 2022.
[B98] Gerhard Klimeck, "Drift-Diffusion-Lab with Bias and Light", nanoHUB Online Recitation Series for Semiconductor Education and Workforce Development, https://nanohub.org/events/details/2173 , https://nanohub.org/resources/36068 May 2, 2022.
[B97] Gerhard Klimeck, "Bandstructure Models", nanoHUB Online Recitation Series for Semiconductor Education and Workforce Development, https://nanohub.org/events/details/2172 , https://nanohub.org/resources/36067 April 27, 2022.
[B96] Gerhard Klimeck, "PN Junctions", nanoHUB Online Recitation Series for Semiconductor Education and Workforce Development, https://nanohub.org/events/details/2171, https://nanohub.org/resources/36066 April 18, 2022.
[B95] Gerhard Klimeck, "ABACUS Overview and Crystal Structures", nanoHUB Online Recitation Series for Semiconductor Education and Workforce Development, https://nanohub.org/events/details/2169 , https://nanohub.org/resources/36065 April 11, 2022
[B94] Gerhard Klimeck, "MOSFETs", nanoHUB Online Recitation Series for Semiconductor Education, https://nanohub.org/events/details/2120 , https://nanohub.org/resources/35687 Feb. 2, 2022.
[B93] Gerhard Klimeck, "MOS Capacitors", nanoHUB Online Recitation Series for Semiconductor Education, https://nanohub.org/events/details/2119 , https://nanohub.org/resources/35686 . Jan 26, 2022.
[B92] Gerhard Klimeck, "Bipolar Junction Transistors", nanoHUB Online Recitation Series for Semiconductor Education, https://nanohub.org/events/details/2157, https://nanohub.org/resources/35685 Jan. 19, 2022.
[B91] Gerhard Klimeck, "Drift-Diffusion-Lab with Bias and Light", nanoHUB Online Recitation Series for Semiconductor Education, https://nanohub.org/events/details/2116 , https://nanohub.org/resources/35684 Jan. 12, 2022.
[B90] Gerhard Klimeck, "Bandstructure Models", nanoHUB Online Recitation Series for Semiconductor Education, https://nanohub.org/events/details/2115 , https://nanohub.org/resources/35683 Dec. 16, 2021.
[B89] Gerhard Klimeck, "PN Junctions", nanoHUB Online Recitation Series for Semiconductor Education, https://nanohub.org/events/details/2113, https://nanohub.org/resources/35682 Dec. 8, 2021.
[B88] Gerhard Klimeck, "ABACUS Overview and Crystal Structures", nanoHUB Online Recitation Series for Semiconductor Education, https://nanohub.org/events/details/2112 , https://nanohub.org/resources/35679 Dec. 1, 2021.
[B87] Gerhard Klimeck, "Mythbusting Scientific Knowledge Transfer with nanoHUB.org ", Host: Vice President for Research and Partnerships, Simiomo Corporation, Japan, May 14
[B86] Gerhard Klimeck, "Mythbusting Scientific Knowledge transfer with nanoHUB.org ", Yegor Gaidar Summer Leadership Program, July 14, 2014

[B85] Gerhard Klimeck, "Nanohub Summary", Briefing to Krishna Shenai, Ph.D. Principal Electrical Engineer, Process Technology Research, Energy Systems Division, Argonne National Laboratory , December 12, 2013

[B84] Gerhard Klimeck, "nanoHUB.org", Briefing to Dr. Germán Guido-Lavalle Provost Instituto Tecnologico Buenos Aires (ITBA). Oct 8, 2013

[B83] Gerhard Klimeck, "nanoHUB.org", Briefing to Dr. Dennis Buss, Oct 1 2013

[B82] Gerhard Klimeck, "nanoHUB", Briefing to Intel Manufacturing site, Chengdu, China, Aug. 2nd, 2013

[B81] Gerhard Klimeck, "nanoHUB.org", Briefing to Dr. Germán Guido-Lavalle Provost Instituto Tecnologico Buenos Aires (ITBA). Oct 8, 2013

[B80] Gerhard Klimeck, "nanoHUB", Briefing to Intel Manufacturing site, Dalian, China, July 26, 2013

[B79] Gerhard Klimeck, "Transferability of nanoHUB", briefing to Thomas Hertel, Nelson Villoria, Krannert School of Business, Thursday May 9, 2013

[B78] Gerhard Klimeck, "nanoHUB Impact Metrics", Briefing to Teaching and Learning Technology Leadership team. Host Donna Cumberland, Attendees: Donalee H. Attardo, Mathew Pistilli, Bethany, James Willins, Tuesday May 7, 2013

[B77] Gerhard Klimeck, "nanoHUB.org and NEMO for topological Insulators", Briefing to Dan Green, ONR, Jan 22, 2013, Purdue University

[B76] Gerhard Klimeck, "Updates on NCN and nanoHUB", Discovery Park Leadership Meeting, Jan. 8, 2012

[B75] Gerhard Klimeck, "Purdue HUB Collaboratory", Briefing to Frank Cepollina, NASA, Host. Prof. Melba Crawford, Purdue, Feb. 9, 2012

[B74] Gerhard Klimeck, "nanoHUB.org powered by HUBzero® – A Platform for Collaborative Research with Quantifiable Impact on Research and Education", Briefing to Tang Zhen An, Hui Hung, Shufeng Xia, Dalian University, China, Host. Prof. Mark Lundstrom, Purdue, March. 8, 2012

[B73] Gerhard Klimeck, "nanoHUB.org: A Global Cyberinfrastructure Serving Over 180,000 Users - What are all these people doing? Customized User Experiences?", Briefing to Nor1, CEO Art Norins, VP: Sanjay Wahi, and Data Scientist Morteze Shahram, Sunnyvale, CA, Oct. 28, 2011

[B72] Gerhard Klimeck, George Adams III., "nanoHUB – Cyberinfrastructure Impact, Network of HUBS – Manufacturing/Materials, Compute Cycles", Briefing to DARPA TTO, Mr. Barry Ives, Deputy Director, LTC Nathan Wiedenman, Deputy Program Manager, Oct. 3, 2011, Arlington VA.

[B71] Gerhard Klimeck, "nanoHUB Impact and your impact in grad school", Briefing to NCN Graduate student body, Host: Dr. Lynn Zentner, Sept 19, 2011

[B70] Monica Allain, Gerhard Klimeck, "Colombia-Purdue Institute for Advanced Scientific Research: Fronteras de Educación", Universidad de National, Medellin, March 15, 10am, Medellin, Colombia, presentation to Deans and Faculty.

[B69] Gerhard Klimeck, Monica Allain, "Colombia-Purdue Institute for Advanced Scientific Research: Fronteras de Educación", Universidad de Bolivariana, March 15, 2pm, Medellin, Colombia - presentation to Deans and Faculty.

[B68] Gerhard Klimeck, Monica Allain, "Colombia-Purdue Institute for Advanced Scientific Research: Fronteras de Educación", Universidad de Antioquia, March 16, 9am, Medellin, Colombia, – presentation to Dr. Alfonso Monsalve Solórzano, Vice-president for Research and Faculty.

[B67] Gerhard Klimeck, Monica Allain, "Cyperinfrastructure for Colombia - Colombia-Purdue Institute for Advanced Scientific Research", Universidad de EAFIT, March 16, 1pm, Medellin, Colombia, – presentation to Vice Rector General Julio Acosta and Dean of Engineering Alberto Rodriguez, and Faculty.

[B66] Gerhard Klimeck, Monica Allain, "Colombia-Purdue Institute for Advanced Scientific Research: Fronteras de Educación", Universidad National, March 17, 9am, Bogota, Colombia – presentation to Deans and Faculty.

[B65] Gerhard Klimeck, "nanoHUB.org – Purdue Global Impact", Universidad Javeriana, March 17, 3pm, Bogota, Colombia – prentation to Deans to and Faculty

[B64] Gerhard Klimeck, "nanoHUB.org – Cyberinfrastructure For Education and Research", private dinner event at the home of Purdue alum Gilberto Gomez, Universidad Javeriana, March 17, 3pm, Bogota, Colombia – briefing to Colombia's Minister of Education: María Fernanda Campo.

[B63] Gerhard Klimeck, "nanoelectronics research in the Klimeck research group", Universidad de Los Andes, March 18, 9am, Bogota, Colombia, presentation to nanoelectronics and materials faculty.

[B62] Gerhard Klimeck, "SME Update, Compute Cycles, Education HUB", April 20, 2011, Briefing Mr. Aneesh Chopra, US Chief Technology Officer (CTO), U.S. OSTP.

[B61] Gerhard Klimeck, "Multi-Scale and Multi-Expertise HUB-based Virtual Organizations", April 20, 2011, Briefing Mr. Thomas Kalil, Deputy Director for Policy, U.S. OSTP.

[B60] Gerhard Klimeck, Krishna Madhavan, George Adams III., "Learning Flow Informatics as an Instrumentation Paradigm within Cyberlearning Environments", April 21, 2011, Briefing Dr. Barbara Olds, NSF EHR.

[B59] Gerhard Klimeck, "Concept: National Center / Lab for Cyberinfrastructure", May 12, 2011, Briefing Kei Koizumi, U.S. OSTP.

[B58] Gerhard Klimeck, "nanoHUB.org powered by HUBzero® : A Platform for Collaborative Research - Mythbusting Scientific Knowledge Transfer", July 15, 2011, Briefing Dr. Katherine Stevens, Director, Materials and Manufacturing Directorate, Dr. Barry Farmer, Wright Patterson Air Force Base, Directorate RX

[B57] Gerhard Klimeck, "HUBzero ® ", July 15, 2011, Briefing Mr. Brian Stucke and Mr. Bryon Foster, CTO, Materials and Manufacturing Directorate, Dr. Barry Farmer, Wright Patterson Air Force Base, Directorate RX

[B56] Gerhard Klimeck, George Adams III., "Briefing to Purdue Decadal Planning Committee", July 27, 2011, led by Provost Prof. Tim Sands

[B55] Gerhard Klimeck, "nanoHUB Cyberinfrastructure for Colombian Technology Growth", Sept 8th, 2011, Secretary of economic development if the Bogota district, President of the science and technology council, Codiciti, Hernando Gomez, Colombia.

[B54] Jean Allain, Gerhard Klimeck, "An EPICS Program for Colombia", Sept 9th, 2011, Briefing to Colombia's Minister of Education: María Fernanda Campo.

[B53] Gerhard Klimeck, "Response to Educator's Prime Interests - Guidance into nanoHUB.org", NCN Workshop on Simulation-Based Learning, Nov. 5-6, Big Ten Conference Center, Chicago.

[B52] Gerhard Klimeck, "nanoHUB.org overview", NCN Workshop on Simulation-Based Learning, Nov. 5-6, Big Ten Conference Center, Chicago.

[B51] Mathieu Luisier, Gerhard Klimeck, "OMEN: a Quantum Transport Modeling Tool for Nanoelectronic Devices", Briefing to Dr. Andrew Skipo, Motorola Inc., June 29, 2009, Purdue University.

[B50] Gerhard Klimeck, "nanoHUB.org Demo and Content Development Options", Briefing to Dr. Deb. Newberry, Dakota County Technical College, Feb. 23, 2009, Purdue University.

[B49] Gerhard Klimeck, "Atomistic Nanoelectronic Modeling and Deployment on nanoHUB.org", Briefing to Dr. Steve Hillenius (SRC) and Dr. Mark Pinto (Applied Materials), Feb. 21, 2009, Purdue University.

[B48] Gerhard Klimeck, "nanoHUB.org: Future Cyberinfrastructure serving over 90,000 users today", Briefing to Prof. Fire Tom. Wada, University of the Ryukyus, Okinawa, Japan, Feb. 13, 2009, Purdue University.

[B47] Gerhard Klimeck, "nanoHUB.org: Future Cyberinfrastructure serving over 89,000 users today", Briefing to EAFIT University, Medellin, Colombia, Alberto Rodríguez García, Dean of Engineering, Oscar E. Ruiz, Director of PhD programs, January 28, 2009, Purdue University.

[B46] Gerhard Klimeck, "nanoHUB.org: Future Cyberinfrastructure serving over 85,000 users today", Briefing to the NCN Education Advisory Board, November 20, 2008, Purdue University.

[B45] Gerhard Klimeck, "nanoHUB.org: Future Cyberinfrastructure serving over 85,000 users today", Briefing to Kwang-Ryeol Lee, Hyung-Min Rho, and Jung-Ho Kim, Korean Institute of Science and Technology (KIST), November 20, 2008, Purdue University.

[B44] Gerhard Klimeck, "nanoHUB.org: Future Cyberinfrastructure serving over 68,000 users today", Briefing to GLCPC Virtual School of Computational Science and Engineering Planning Meeting, July 1-2, 2008, University of Michigan, Ann Arbor.

[B43] Gerhard Klimeck, "nanoHUB.org: Future Cyberinfrastructure serving over 58,000 users today", Briefing to Purdue IGERT proposal team, Feb. 14, 2008.

[B42] Gerhard Klimeck, "nanoHUB.org: Future Cyberinfrastructure serving over 58,000 users today", Briefing to KIST visitors to the Purdue Cyber Center, Host: Barbara Fossum, Monday, Feb. 11, 2008.

[B41] Gerhard Klimeck, "nanoHUB.org: Future Cyberinfrastructure serving over 26,000 users today", Briefing to Shalaev Research Group, Host: Prof. Vlad Shalaev, Friday, Nov. 29, 2007.

[B40] Gerhard Klimeck, "nanoHUB.org opportunities", Briefing Purdue ECE untenured faculty, Host: Head of ECE, Prof. Mark Smith , Friday, Nov. 16, 2007.

[B39] Gerhard Klimeck, "nanoHUB.org", Briefing to IEEE Spectrum Editor Glen Zorpette, Host: Purdue CIO Gerry McCartney, Friday, Nov. 7, 2007.

[B38] Gerhard Klimeck, "Blue Ocean Opportunity", Briefing Purdue ECE external Avisory board, Host: Head of ECE, Prof. Mark Smith , Friday, Nov. 1, 2007.

[B37] Gerhard Klimeck, "nanoHUB.org demo", Briefing Purdue ECE Industrial Advisory Board, Host: Head of ECE, Prof. Mark Smith , Sept. 10, 2007.

[B36] Gerhard Klimeck, "nanoHUB.org demo", Briefing to Lockheed Martin, Drs. Richard Barto, Anna L Paulson , Host. Dr. George Adams, Purdue Discovery Park, Wednesday, May 16, 2007.

[B35] Gerhard Klimeck, Michael McLennan, "NCN overview and nanoHUB.org demo", Briefing to Purdue University, Discovery Park Key Issues Meeting, Host. Prof. Al Rebar, Director Discovery Park, Wednesday, May 16, 2007.

[B34] Gerhard Klimeck, Michael McLennan, "nanoHUB.org demo", Briefing to Steven Kahn, Stanford University, Host. Prof. Chris Hoffmann, Purdue Rosen Center for Advanced Computing. April 19, 2007.

[B33] Gerhard Klimeck, "nanoHUB.org demo", Briefing to Brian R. Wilson, Distinguished Director, CTO, SUN micorsystems, Host. Ahmed Elmargamid, Purdue Cyber Center. April 2, 2007.

[B32] Gerhard Klimeck, "nanoHUB.org demo", Briefing to Winslow Sargeat, Venture Investors LLC, Host. Barbara Fossum, Purdue Cyber Center. April 2, 2007.

[B31] Gerhard Klimeck, "nanoHUB.org A fully operational Science Gateway for the nano Science Community", Briefing to Jake Chen, UIPUI, Host. Barbara Fossum, Purdue Cyber Center. Feb. 15, 2007.

[B30] Gerhard Klimeck, "The nanoHUB: a demo", Argonne National Lab, October 30, 2006.

[B29] Gerhard Klimeck, Mark Lundstrom, Michael McLennan, Sebastien Goasguen, Krishna Madhavan, "The nanoHUB: a demo", NCN Purdue University Advisory Board, Purdue University, Jan 5, 2006.

[B28] Gerhard Klimeck, "Atomistic simulations of long-range strain and close-range electronic structure in self-assembled quantum dot systems and Building and Deploying Community Nanotechnology Software Tools on nanoHUB.org", Briefing to Rebecca Cortez, Robert Fitch, Mark Calcaterra, Air Force Research Lab, Host. Dr. Edgar Martinez, Purdue University, Jan 13, 2006.

[B27] Gerhard Klimeck, "The Network For Computational Nanotechnology and Bandstructure Effects in Nanoelectronics", Briefing to Mark Foisy and Brian Winstead of Freescale Semiconductor, Purdue University, Nov 17, 2005.

[B26] Gerhard Klimeck, "The Network For Computational Nanotechnology", Briefing to Dennis Buss, Chris Bowen, Ramesh Venugopal, Texas Instruments, Purdue University, Nov 10, 2005.

[B25] Gerhard Klimeck, "The Network For Computational Nanotechnology", Briefing to Ralph Roskies, Pittsburgh Supercomputing Center, Purdue University, Nov 4, 2005.

[B24] Gerhard Klimeck, "The Network For Computational Nanotechnology", Briefing to Klaus Schulten Computational Biology Research Group, University of Illinois Urbana Champaingn, Beckmann Institute. Sept. 16, 2005.

[B23] Gerhard Klimeck, "Nanowire Simulations and The Network For Computational Nanotechnology", Briefing to Alan Seabaugh (Notre Dame) and Lars-Erik Wernersson (Lund). Sept. 14, 2005.

[B22] Gerhard Klimeck, Mark Lundstrom, Michael McLennan, Sebastien Goasguen, "The Network For Computational Nanotechnology", Briefing to Oak Ridge National Laboratory, Dr. John Cobb, May. 19th, 2005.

[B21] Marek Korkusinski, Gerhard Klimeck, Haiying Xu, Seungwon Lee, Sebastien Goasguen, Faisal Saied, "Atomistic simulations in nanostructures composed of tens of millions of atoms", Briefing to Intel, Dr. Robert Chau, March 31st, 2005.

[B20] Gerhard Klimeck, Mark Lundstrom, Michael McLennan, Sebastien Goasguen, "The Network For Computational Nanotechnology", Briefing to Lockheed Martin, Sharon L. Smith, Raj. K. Jain, Feb. 11th, 2005.

[B19] Gerhard Klimeck, "The Network For Computational Nanotechnology", Briefing to Raytheon, Jill Pate and Dr. Zaher Bardai, Feb. 3rd, 2005.

[B18] Gerhard Klimeck, "Building the Infrastructure, lessons from the Network for Computational Nanoscience", Planning meeting for NIH Center for design of biomimetic nanoconductors, Organized by Eric Jakobson, University of Illinois Urbaba-Champaign, Dec. 17-19, 2004.

[B17] Gerhard Klimeck, "nanoHUB infratructure for NCLT simulations", Briefing to Bob Chang, NCLT, Northwestern University, Dec. 8, 2004.

[B16] Gerhard Klimeck, "NEGF details in NEMO 1-D and Multimillion atom simulations", Briefing to Intel, Mark Stettler, and Borna Obradovic, Oct. 28, 2004.

[B15] Gerhard Klimeck, Michael McLennan, "Computing, Software, and Cyberinfrastrurcture", Briefing to Intel, Mark Stettler, Martin Giles, and Borna Obradovic, Oct. 28, 2004.

[B14] Gerhard Klimeck, "Spin Effects in Quantum Dots", Briefing to Nanotechnology Research Initiative, Gurtej Sandu (Micron), Joerg Appenzeler for Tom Theis (IBM), Pushkar Apte (SIA), George Bourianoff (Intel), Sept 20, 2004.

[B13] Mark Lundstrom, Gerhard Klimeck, "The Network for Computational Nanotechnology (NCN)", Briefing to Intel, JoZell Johnsson, Sept. 21, 2004.

[B12] Gerhard Klimeck, "The Network for Computational Nanotechnology (NCN)", Briefing to EMC, Deborah Snow and Gael Keough, Sept. 21, 2004.

[B11] Anisur Rahman, Jing Wang, Ali Yannik, Gerhard Klimeck, "Bandstructure and Spintronics Research", Briefing to Intel Corp., Dimitry Nikonov, Sept. 21, 2004.

[B10] Mark Lundstrom, Gerhard Klimeck, "The Network for Computational Nanotechnology (NCN) and Intel", Briefing to Intel Corp., Kevin Kahn, Sept. 10, 2004.

[B9] Gerhard Klimeck, "The Nanoelectronic Modeling tool (NEMO): Possible Release to the Nanotechnology Community and Nanoelectronic Modeling (NEMO): Is it Device or Material Modeling?", Briefing to Raytheon, Gary Valentine, Neil Peterson, at Purdue University, July 27, 2004.

[B8] Gerhard Klimeck, "The Network for Computational Nanotechnology and Nanoelectronic Modeling (NEMO): Is it Device or Material Modeling?", Briefing to Micron Corporation, at Purdue University, July 13, 2004.

[B7] Gerhard Klimeck, "The Network for Computational Nanotechnology", Briefing to High Performance Computing Modernization Program, Steve Goodnick, Paul Sotirelis, and Marco Santorini, at Purdue University, June 25, 2004.

[B6] Gerhard Klimeck, "Development of the Nanoelectronic Modeling tool (NEMO)", Briefing to ARO, Barry Perlman, May 3, 2004.

[B5] Gerhard Klimeck, "Computational Nanoelectronics, Towards: Design, Analysis, Synthesis, and Fundamental Limits", Briefing to Accelrys Corp., Gerhard Goldbeck-Wood, Scott Kahn, Amitesh Maiti, Presentation at Purdue, Jan 21, 2004.

[B4] Gerhard Klimeck, "nanoHUB", Briefing to Intel Manufacturing site, Dalian, China, July 26, 2013

OTHER PRINTED PUBLICATIONS

[O1] Mark Lundstrom, Gerhard Klimeck, Sebastien Goasguen, and Michael McLennan, .The Network for Computational Nanotechnololgy: A Vision for Theory, Simulation, and Computation,. Facets, International Union of Materials Research Societies, 2005.

PANEL PARTICIPATION (18 TOTAL)

[18] Susanne Yelin, Mikhail Lukin, Marco Pistoia, Gerhard Klimeck, & Mariia Mykhailova, "Panel on Quantum Education and Outreach", Quantum Science Center, 2nd Annual Quantum Summer School, Purdue University, May 8-12, 2022.

[17] NITRD Big Data Interagency Virtual Workshop on Pioneering the Future of Federally Supported Data Repositories Wednesday Jan 13th - Friday Jan 15th, 2021 https://www.orau.gov/bdworkshop21

[16] 2021 NNI Strategic Planning Stakeholder Workshop, January 11-13, 2021, National Nanotechnology Coordination Office

[15] Gerhard Klimeck, "Broadening - Materials Genome", Discovery Park Panel Discussion, sept 15, 2014, Host : Prof. Alan Rebar

[14] Gerhard Klimeck, "nanoHUB with Global impact", Discovery Park Panel Discussion, sept 15, 2014, Host : Prof. Alan Rebar

[13] Dennis Buss, Mark Lundstrom, Muhammad Alam, Supriyo Datta, Joerg Appenzeller, Gerhard Klimeck, "A Forum on the Future of Electronics", Fowler Hall, Purdue, Oct. 1, 2013

[12] Micah Altman, Gerhard Klimeck, Mark Hahnel, Denis Tenen, Kenneth Crews, "Research Data Symposium at Columbia University, Panel 4: Discover, Share, & Impact", Panel 4: Discover, Share, & Impact, Feb 27, 2013

[11] "Symposium: Learning and Discovery in the Connected Age", Michigan Theatre, Oct. 8, 2012

[10] "What do get out of a post-doc position", Panel Discussion organized by the Purdue Postdoctoral Association, Sept 22, 2011

[9] "Open Source Developments in Nanotechnology", Host and Moderator: Dr. Rajinder Khosla, NSF Program Director Panelists: Chuck Bouldin (NSF Program Director, DMR), Sandip Tiwari (Director NNIN), Gerhard Klimeck (NCN Associate Director) NSF nano Grantee's Meeting, Dec. 4th, 2007

[8] "Quantum Electronics", Host and Moderator: Dr. Gerhard Klimeck, Panelists: Kang Wang, Dragica Vasileska, Dmitri Nikonov, and Susan Coppersmith, NSF Workshop on Quantum, Molecular and High Performance Modeling and Simulation for Devices and Systems (QMHP), April 17, 2007.

[7] "Cyber Infrastructure Roundtable Discussion, Host and Moderator: Ahmed Elmagarmid, Director Cyber Center", Panelists: Brian Wilson (SUN micorsystems, CTO), Gerhard Klimeck, Rudolf Eigenmann, David Ebert, Thomas J. Hacker

[6] "Nano Frontiers Workshop", by invitation only, Meeting sponsored by NSF, NIH, Pew Charitable Trust, Wilson Center for International Scholars, Feb. 9-10, 2006.

[5] "Panel Discussion: Nanotechnology in the Americas", GNN 2005, 3rd International Workshop to Develop a Global Nanotechnology Network, May 25-27, 2005, Saarbrücken, Germany.

[4] "Panel discussion: Interaction with Industry", 2004 NSF Nanoscale Science and Engineering Grantees Conference, Washington, DC, Dec. 15, 2004.

[3] "Opportunities on International Collaborations on Grid Computing", Grid Forum Korea (GFK) Summer Workshop, Seoul, Korea, Aug. 26-27, 2004, Moderator: Prof. Chan-Hyun Youn (ICU, Korea).

[2] "Bird of a Feather Panel on HPC Innovation for Nanotechnology", Supercomputing Conference 2003, Phoenix, AZ, November 16-21, 2003, Moderator: Dr. David Kahaner (ATIP, Japan).

[1] "Software Development at Academia, Government Labs, Industry", John Barker Agenda/Questions: How can the three share development? Possibly cooperation like designer chemistry software? What are the technical challenges? What is the software we are talking about anyways?, Glasgow, Scotland, UK, May 22-25, 2000, Moderator: Prof. John Barker (U. of Glasgow).