

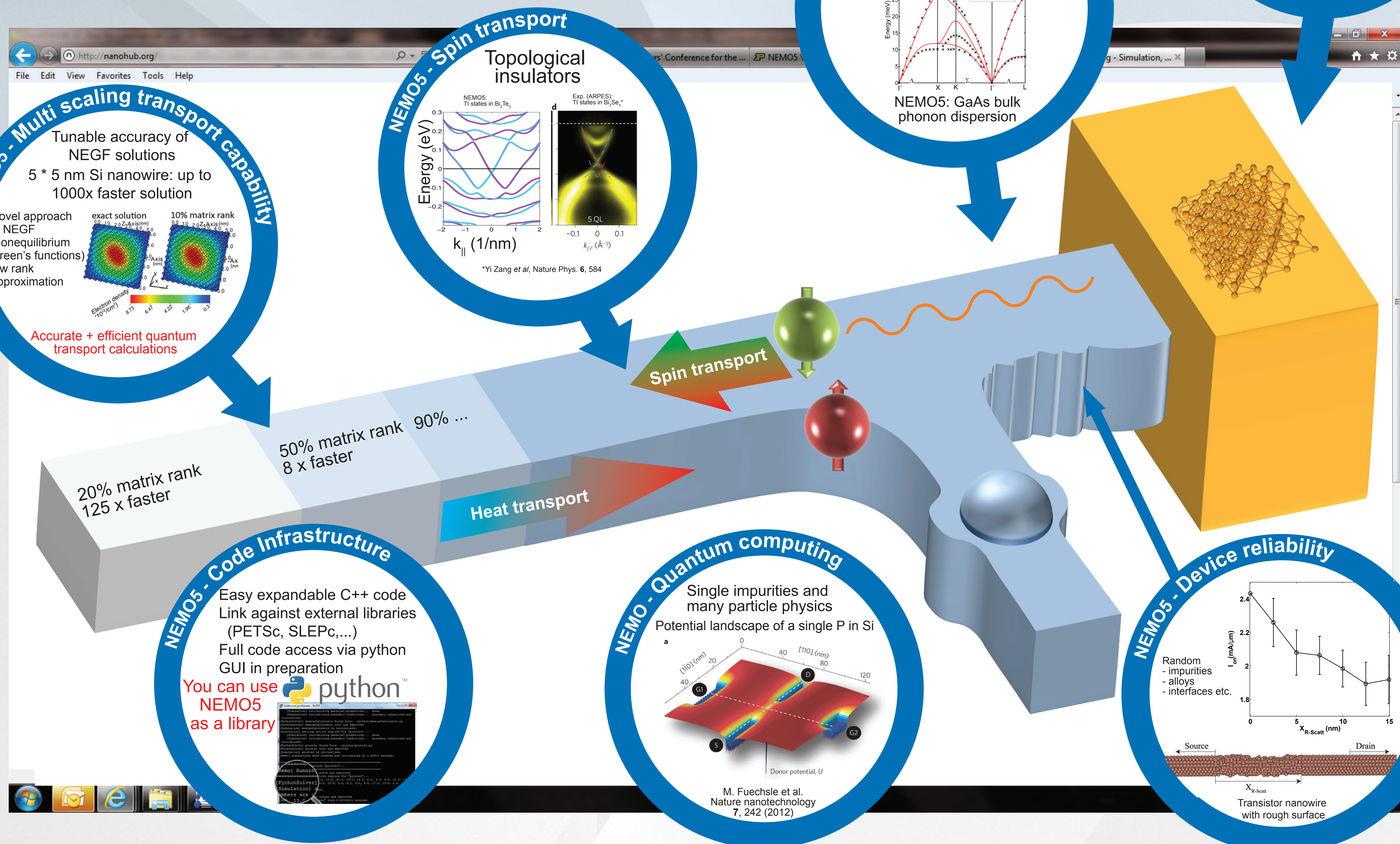
From Atoms to Devices: NEMO5

Free, multiscale, multipurpose, highly parallel
semiconductor nanodevice simulation tool

NEMO5 team: Tillmann Kubis, Jim Fonseca,
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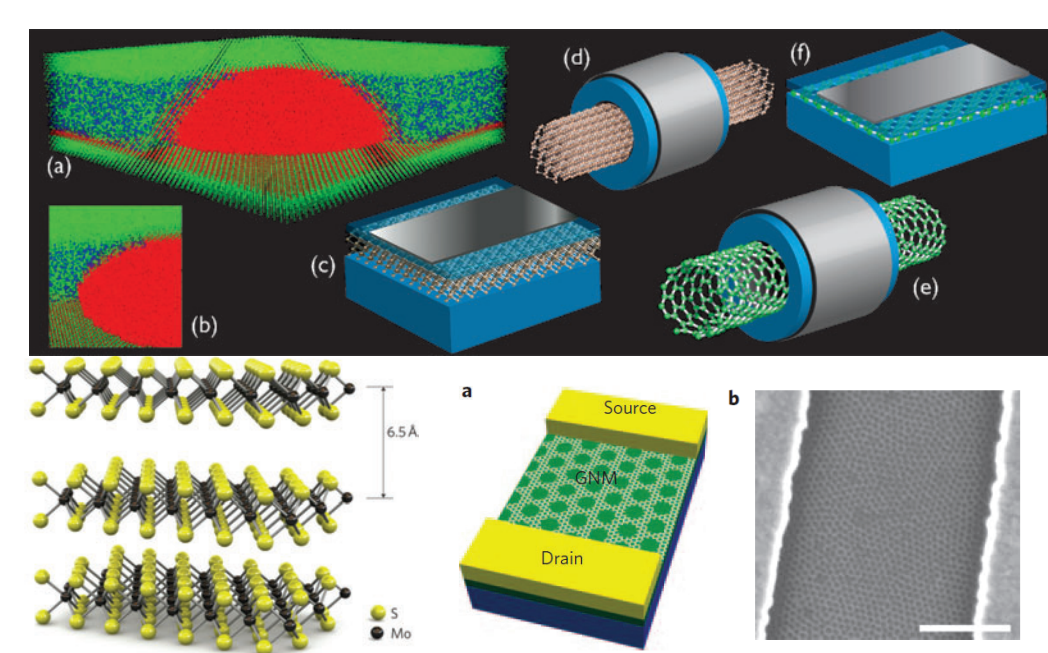
Network for Computational Nanotechnology,
Purdue University, West Lafayette, Indiana, USA

If you need
modeling &
simulation insights,
ask for NEMO



Arbitrary device geometries

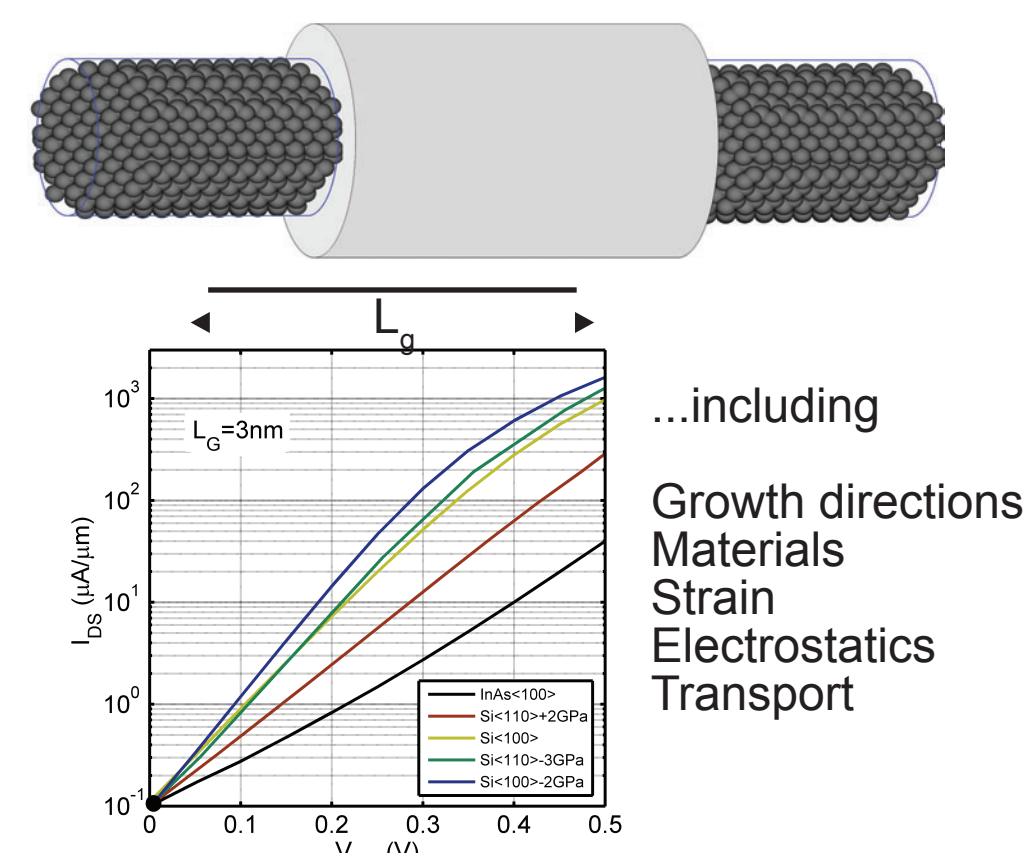
0D, 1D, 2D, 3D available (4D in preparation)
NEMO5: samples of device geometries



NEMO5 is ready for future device generations

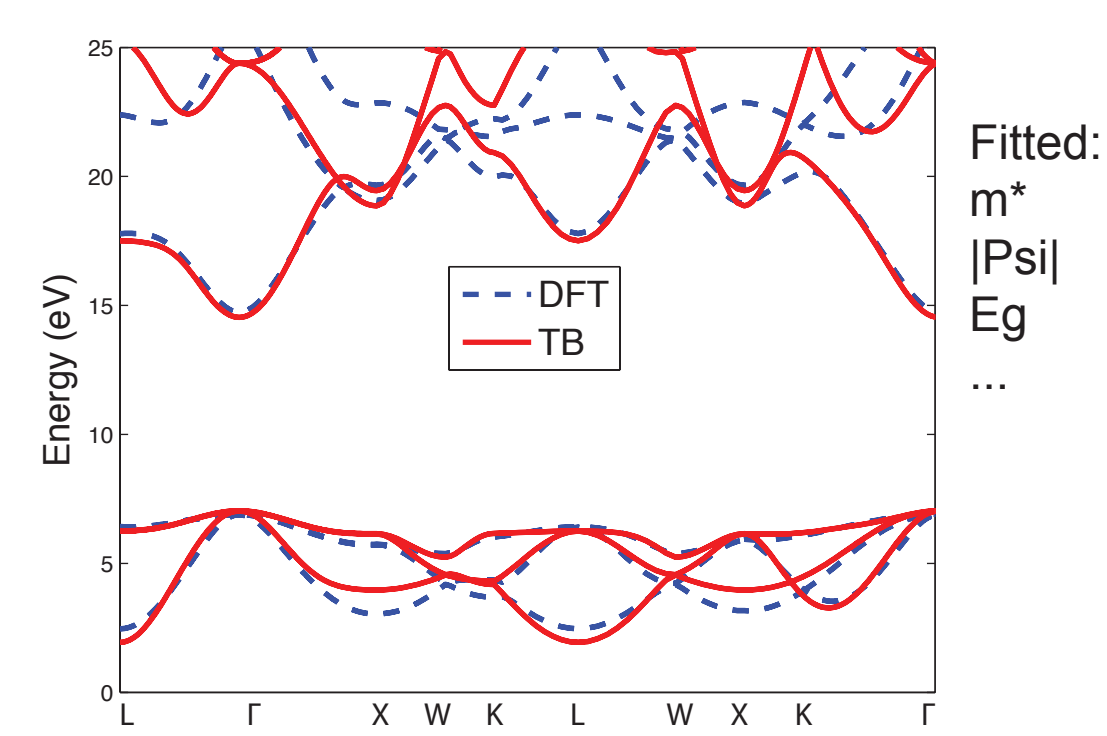
Ultrascaled devices

NEMO5: transport in 4nm Si GAA nanowire transistor



Tight binding to density functional theory

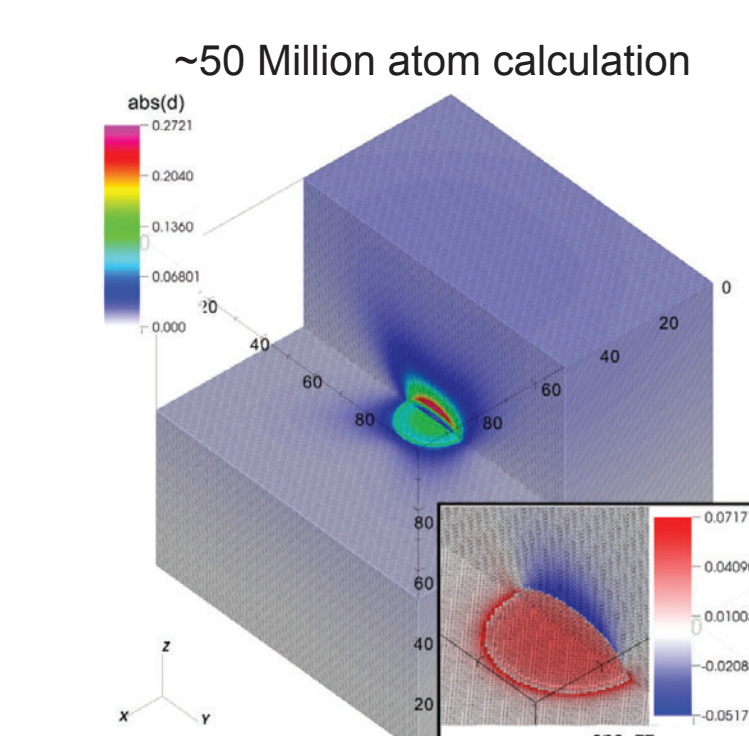
NEMO5 TB vs. DFT: fitted MgO band structure



Works for all (even exotic) materials

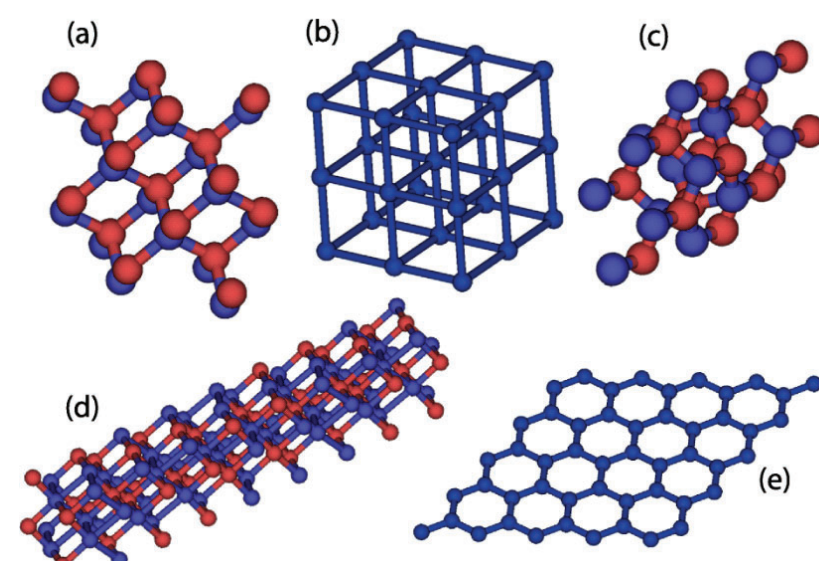
Structure relaxation

NEMO5: InAs dome shaped dot in GaAs



Atomic resolution

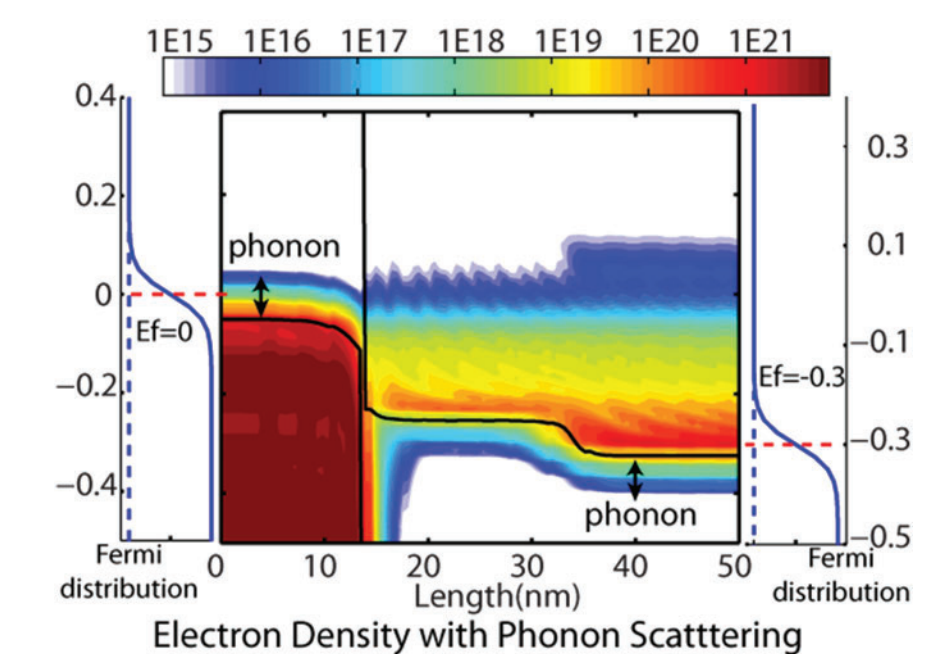
All existing crystal symmetries



Add new symmetries in no time

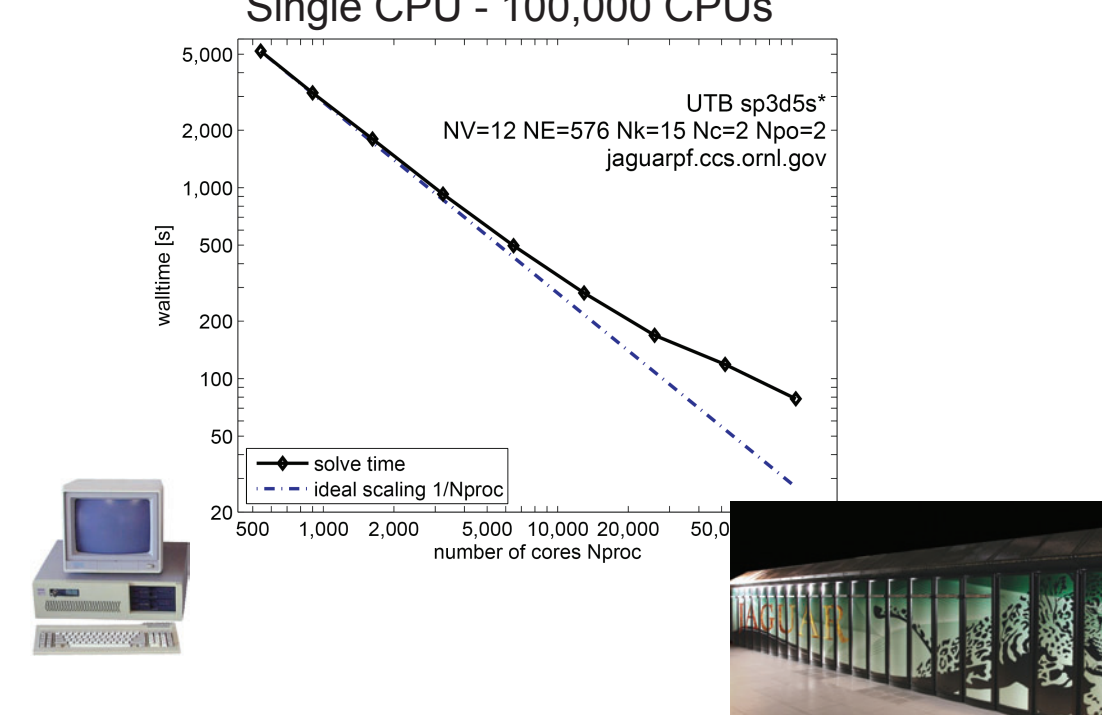
Transport with scattering

NEMO5: phonon assisted band to band tunneling



MPI-Scalability

Multipatform support
Single CPU - 100,000 CPUs



Collaborators

NanoHUB world... 200,000+ users
NEMO based tools: 10,000+ users



Intel, Samsung, GlobalFoundries, IBM,
Lockheed Martin, ...

