**Spintronics Workshop II**

**September 11, 2019**

**Burton D. Morgan Center for Entrepreneurship, Room 121**

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| **TIME** | **AGENDA** |
| 8:30 – 9:15 a.m. | Gathering/Registration |
| 9:15 – 9:25 a.m. | Welcome/Opening remarks:  **Yong Chen**, Director of Purdue Quantum Science and Engineering Institute, Karl Lark-Horovitz Professor of Physics and Astronomy and Professor of Electrical and Computer Engineering, Purdue University |
| 9:25 – 9:30 a.m. | Discover Park Distinguished Lecture Series Introduction  **Tomás Díaz de la Rubia**, Purdue Chief Scientific Officer and Senior Vice President of Strategic Initiatives |
| 9:30 – 10:20 a.m. | Discovery Park Distinguished Lecture Series  **Hideo Ohno**  President, Tohoku University  *"Why We Need Spintronics in the Era of loT and AI"* |
| 10:20 – 10:30 a.m. | President Ohno Question and Answer Session/Discussion  Moderated by **Ernesto Marinero**, Professor of Materials Engineering and Electrical and Computer Engineering, Purdue University |
| 10:30 – 10:45 a.m. | **Break** |
| **Spintronics Devices and Systems**  **Session Chair: Haiyan Wang**, Professor of Materials Engineering and Electrical and Computer Engineering, Purdue University | |
| 10:45 – 11:10 a.m. | **Joerg Appenzeller**  Professor of Electrical and Computer Engineering, Purdue University  *"Binary stochastic neurons and compound synapses from nano-magnets"* |
| 11:10 – 11:35 a.m. | **Shunsuke Fukami**  Associate Professor of the Research Institute of Electrical Communication (RIEC), Tohoku University  *"Spin-orbit torque switching for high-speed memory and artificial neural network"* |
| 11:35 a.m. – 12:00 p.m. | **Sumeet Gupta**  Assistant Professor of Electrical and Computer Engineering, Purdue University  *"Valley-coupled Spintronics for Non-Volatile Storage and Computing"* |
| 12:00 – 12:25 p.m. | **Naoya Onizawa**  Assistant Professor of theResearch Institute of Electrical Communication (RIEC)**,** Tohoku University  *"Stochastic Computing for Brainware LSI"* |
| 12:25 – 1:45 p.m. | **Lunch and Poster Session (see page 3), MRGN Café** |



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| **Novel Spintronics Materials and Measurements**  **Session Chair: Michael Manfra**, Professor of Physics and Astronomy, Electrical and Computer Engineering, and Materials Engineering, Purdue University | |
| 1:45 – 2:10 p.m. | **Zhihong Chen**  Professor of Electrical and Computer Engineering, Associate Director for Research in the Birck Nanotechnology Center, Purdue University  *"2D Valley-Spin Transport in Transition Metal Dichalcogenides"* |
| 2:10 – 2:35 p.m. | **Satoshi Iihama,**  Assistant Professor, Advanced Institute for Materials Research (AIMR)**,** Tohoku University  *"All-optical magnetization switching mediated by laser-induced spin-current"* |
| 2:35 – 3:00 p.m. | **Pramey Upadhyaya**  Assistant Professor of Electrical and Computer Engineering, Purdue University  *"Spin qubit and magnon hybrids: novel platform for quantum spintronics"* |
| 3:00 – 3:25 p.m. | **Yoshiro Hirayama**  Professor, Department of Physics, Graduate School of Science, Tohoku University  *"Resistively-detected NMR and nuclear resonance imaging"* |
| 3:25 – 3:40 p.m. | **Break** |
| **Novel Spintronics Materials and Measurements (Continued)**  **Session Chair: Yuli Lyanda-Geller**, Professor of Physics and Astronomy, Purdue University | |
| 3:40 – 4:05 p.m. | **Takafumi Sato**  Professor, Advanced Institute for Materials Research (AIMR), Tohoku University  *"Electronic states of novel topological materials studied by ARPES"* |
| 4:05 – 4:30 p.m. | **Ken Nomura**  Associate Professor of theInstitute for Materials Research (IMR)**,** Tohoku University  *"Spintronics functionalities of topological semimetals"* |
| 4:30 – 4:55 p.m. | **Leonid Rokhinson**  Professor of Physics, Purdue University  *"Magnetic semiconductors-based platform to realize non-abelian excitations"* |
| 4:55 – 5:00 p.m. | **Closing Remarks** |



**Poster Session**

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| **AUTHORS** | **TITLE** |
| Ahmed Zeeshan Pervaiz, Shuvro Chowdhury, Jan Kaiser, Rafatul Faria, Brian Matthew Sutton, Kerem Yunus Camsari and Supriyo Datta, **Purdue University** | Asynchronous computing with p-bits. |
| Annisa Noorhidayati, Mohammad Hamzah Fauzi, Muhammad Fauzi Sahdan, Shunta Maeda, Motoi Takahashi, Ken Sato, Katsumi Nagase, and Yoshiro Hirayama, **Tohoku University** | Resistively-detected nuclear-magnetic-resonance in quantum point contact |
| Tingting Shen, Vaibhav Ostwal, Kerem Y. Camsari, and Joerg Appenzeller, **Purdue University** | Demonstration of a strain-mediated magnetoelectric write and read unit in a Co60Fe20B20/ Pb(Mg1/3Nb2/3)0.7Ti0.3O3 heterostructure |
| William Andrew Borders, Shunsuke Fukami, and Hideo Ohno, **Tohoku University** | Demonstration of Associative Memory using Spin-Orbit Torque Artificial Synapses |
| Indranil Chakraborty, Amogh Agrawal, Gopalakrishnan Srinivasan, Deboleena Roy, and Kaushik Roy, **Purdue University** | Binary Neural Networks using Stochastic Switching of Nano-Magnets: Learning and Inference |
| Takaaki Dohi, Samik DuttaGupta, Shunsuke Fukami, and Hideo Ohno, **Tohoku University** | Dzyaloshinskii-Moriya interaction and domain wall chirality in W/(Co)FeB/MgO systems |
| Punyashloka Debashis, Pramey Upadhyaya, and Zhihong Chen, **Purdue University** | Stochastic nanomagnets for oscillatory neural networks |
| Jan-Erik Reinhard Wichmann et al., **Tohoku University** | Majorana Zero Modes in Dirac Semimetal Heterostructures |
| Terry Y.T. Hung, Avinash Rustagi, Shengjiao Zhang, Pramey Upadhyaya, and Zhihong Chen, **Purdue University** | Electrical Probing of Valley Spin Coupled Hall Effect |

