

Tohoku-Purdue Workshop on Novel Spintronics Physics and Materials for Future Information Processing



Date: February 18 (Sun), 2018

Venue: A401, Laboratory for Nanoelectronics and Spintronics, Research Institute of Electrical Communication, Tohoku University

Organized by

Laboratory for Nanoelectronics and Spintronics, Research Institute of Electrical Communication (RIEC), Tohoku University
 World Leading Research Center for Spintronics, Tohoku University
 Center for Spintronics Integrated Systems (CSIS), Tohoku University
 Center for Spintronics Research Network (CSRN), Tohoku University
 WPI-Advanced Institute for Materials Research (WPI-AIMR), Tohoku University
 Graduate Program in Spintronics (GP-Spin), Tohoku University
 Spintronics Preeminent Team and Birck Nanotechnology Center, Purdue University

9:00-9:05	Opening (Hideo Ohno)	
9:05-9:40	Takafumi Sato (Tohoku)	Spin-resolved ARPES study of novel topological materials
9:40-10:15	Yong Chen (Purdue/Tohoku)	Spintronics meets topological insulators and other quantum materials
10:15-10:50	Yoshiro Hirayama (Tohoku)	Resistively-detected NMR in semiconductor quantum systems
10:50-11:10	Break	
11:10-11:45	Ernesto Marinero (Purdue)	Magneto-Photonics: Confluence of Spins and Photons, Novel Physics and Devices
11:45-12:20	Shigemi Mizukami (Tohoku)	Nano-layered structure based on TM-Ga (TM = Mn,Co) alloys
12:20-13:50	Lunch	
13:50-14:25	Kerem Camsari (Purdue)	p-bits, p-transistors and p-circuits
14:25-15:00	Shunsuke Fukami (Tohoku)	Analog spin-orbit torque devices for edge AI hardware
15:00-15:15	Break	
15:15-15:50	Kaushik Roy (Purdue)	Fast and Efficient Solution to Dynamical Systems using Stochastic Switching of Nano-magnets
15:50-16:25	Tetsuo Endoh (Tohoku)	Nonvolatile Brain-Inspired VLSIs Based on CMOS/MTJ Hybrid Technology
16:25-16:30	Closing (Hideo Ohno)	

● Registration

The workshop is free of charge and registration is not required.

● Series Symposium and Workshop

The workshop will be followed by the "Kick-off Symposium for World Leading Research Centers – Material Science and Spintronics" to be held on Feb. 19-20 and "Tohoku/SG-Spin Workshop on Spintronics" to be held on Feb. 20-21.

● Committee

H. Ohno, Y. Chen, Y. Hirayama, S. Fukami

● Secretariat

N. Sato



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Tohoku/SG-Spin Workshop on Spintronics

Feb. 20-21, 2018



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Feb. 20 *venue:* Sendai International Center

15:30-17:00

Poster session

Feb. 21 *venue:* Conference room, Laboratory for Nanoelectronics and Spintronics, RIEC, Tohoku University

8:50 - 9:00 **Hideo Ohno** (Tohoku)

Opening

9:00 - 9:30 **Koki Takanashi** (Tohoku)

CPP-GMR and related phenomena in half-metallic Heusler alloy systems

9:30 - 10:00 **Adekunle Adeyeye** (SG)

A Reconfigurable waveguide for energy-efficient transmission and local manipulation of spin wave information at nanoscale

10:00 - 10:25 **Makoto Kohda** (Tohoku)

Spin orbit interaction in a layered semiconductor GaSe

10:25 - 10:40

Coffee Break (15 min.)

10:40 - 11:00 **Lei Shen** (SG)

Spin-orbitronics with oxides and topological insulators

11:10 - 11:35 **Oleg Tretiakov** (Tohoku)

Transformation between skyrmions and antiskyrmions and its relation to lifetime and dynamics

11:35 - 12:05 **Ramanathan Mahendiran** (SG)

Magnetotransport in CMR oxides from 1 kHz to 3 GHz

12:05 - 13:30

Lunch (85 min.)

13:30 - 14:00 **Atsushi Tsukazaki** (Tohoku)

Fermi-level tuning across the Dirac point in Bi_2Se_3 -based thin films

14:00 - 14:30 **Shengyuan Yang** (SG)

Anomalous positional shift in scattering at spin-orbit-coupled NN and NS interfaces

14:30 - 15:00 **Yihong Wu** (SG)

Spin Hall magnetic sensor

15:00 - 15:30 **Yasuo Ando** (Tohoku)

Recent progress of biomagnetic field sensors with ferromagnetic tunnel junctions

15:30 - 15:55 **Hideo Sato** (Tohoku)

Development of (Co)FeB/MgO-based magnetic tunnel junctions down to X nm

15:55 - 16:10

Coffee Break (15 min.)

16:10 - 16:40 **Takahiro Hanyu** (Tohoku)

Challenge of Spintronics-Based Nonvolatile Logic LSI and Its Possibility

16:40 - 17:10 **Liang Gengchiao** (SG)

Switching based spin oscillator using STT and SOT effects

17:10 - 17:40 **Danny Shum** (SG)

Challenges of embedded MRAM for LLC applications: materials & device parameter requirements

17:40 - 17:50 **Hideo Ohno** (Tohoku)

Closing

18:30 -

Banquet @ Barbaresco in Sendai Trust Tower

Registration

The workshop is free of charge, and registration is not required. On-site registration would open only on Feb. 21.

Series Symposium and Workshop

Feb. 19 – 20: "Kick-off Symposium for World Research Centers – Material Science and Spintronics"

Feb. 18: "Tohoku-Purdue Workshop on Novel Spintronics Physics and Materials for Future Information Processing".

Committee and Secretariat

Committee: H. Ohno, Y. Wu, A. Adeyeye, M. Shirai, H. Sato, and S. Souma

Secretariat: N. Sato

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