



3rd International Workshop of Spin/Quantum Materials and Devices (IWSQMD2024) & 6th Workshop on Quantum and Classical Cryogenic Devices, Circuits, and Systems (QCCC2024)

Date: November 5th - 6th, 2024

Venue: Seminar room, 2F at AIMR main building, Tohoku Univ.

Registration fee: free (registration is necessary)

URL: https://www.csrn.tohoku.ac.jp/iwsqmd_qccc_2024.html

Organizers: S. Mizukami, T. Yamashita, H. Morishita, M. Kohda, M. Shirai

Supports: WPI Advanced Institute for Materials Research (AIMR) & Core Research Cluster for Materials Science (CRC-MS), Tohoku Univ., Center for Spintronics Research Network (CSRN), Tohoku Univ. & Spintronics Research Network of Japan (Spin-RNJ), Center for Heterogeneous Quantum/Material Fusion technology (CHQM), Tohoku Univ., Center for Innovative Research in Quantum Materials (CIRQuM), Tohoku Univ., CREST (JST), and KAKENHI (JSPS).

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**スピントロニクス学術研究基盤と連携ネットワーク
SPINTRONICS RESEARCH NETWORK OF JAPAN**



Time table

	Nov. 5th, Tuesday		Nov. 6th, Wednesday	
8:30			8:30-	Room open
9:00			9:00 - 9:30	S. Yamamoto
9:30			9:30 - 10:00	H. Sanada
10:00			10:00 - 10:30	T. Satoh
10:30			break	
11:00			10:45 - 11:15	S. Iihama
11:30			11:15 - 11:45	J. Walowski
12:00			Lunch	
	12:15-	Room open		
12:30				
	12:55 - 13:00	Opening		
13:00	13:00 - 13:30	N. Mizuochi	13:00 - 13:30	Th. Schäpers
13:30	13:30 - 14:00	S. Kanai	13:30 - 13:45	J. Karthein
14:00	14:00 - 14:30	H. Morishita	13:45 - 14:15	T. Otsuka
14:30	14:30 - 15:00	S. Sato	14:15 - 14:30	K. Honda
15:00	break		break	
15:30	15:15 - 15:45	T. An	15:00 - 15:30	H. Terai
16:00	15:45 - 16:15	M. Elyasi	15:30 - 16:00	S. Matsuo
16:30	16:15 - 16:45	K. Sasaki	16:00 - 16:30	T. Kato
17:00	16:45 - 17:15	S. Karube	16:30 - 16:45	D. Pham
17:30	17:15 - 17:45	K. Kondou	16:45 - 16:50	Closing
(17:45)				

Program

1st Day: Nov 5th, Tuesday, 2024

12:55-

Opening

Shigemi Mizukami & Taro Yamashita (Tohoku Univ.)

Session A: Spin quantum defects in wide-gap semiconductors

Chair : Taro Yamashita (Tohoku Univ.)

13:00-

“TBD”

Norikazu Mizuochi (Kyoto Univ.)

13:30-

“TBD”

Shun Kanai (Tohoku Univ.)

14:00-

“Electrical Detection and Control of Individual NV Electron Spin”

Hiroki Morishita (Tohoku Univ.)

14:30-

“Optical coupling with nanostructures to enhance photon emissions from Lanthanoid ions implanted in GaN”

Shin-ichiro Sato (QST)

15:00- Coffee break

Session B: Quantum spintronics

Chair : Hiroki Morishita (Tohoku Univ.)

15:15-

“Observations of local spin dynamics via a scanning nitrogen-vacancy center microscopy”

Toshu An (JAIST)

15:45-

“Applications of spin wave nonlinearities in quantum magnonics”

Mehrdad Elyasi (Tohoku Univ.)

16:15-

“TBD”

Kento Sasaki (U. Tokyo)

16:45-

“Spin current generation via novel spintronic phenomena”

Shutaro Karube (Kyoto Univ.)

17:15-

"Development of chiral-based spintronics devices"

Kouta Kondou (Osaka Univ.)

2nd Day: November 6th, Wednesday, 2024

Session C: Spintronics and photonics

Chair : Shigemi Mizukami (Tohoku Univ.)

9:00-

“Optically detected interference of electron spin waves in a GaAs quantum well”

Sota Yamamoto (Tohoku Univ.)

9:30-

“Two-color Kerr rotation spectroscopy of suspended WSe₂ monolayers”

Haruki Sanada (NTT)

10:00-

“Time-resolved imaging of propagating magnon-polaritons in multiferroic BiFeO₃”

Takuya Satoh (Inst. of Science Tokyo)

10:30- Coffee break

10:45-

“Helicity-dependent circularly-polarized light induced magnetization dynamics in metallic thin films”

Satoshi Iihama (Nagoya Univ.)

11:15-

“Wavelength variation for all-optical helicity-dependent switching in FePt granular media”

Jakob Walowski (Universität Greifswald)

11:45- Lunch

Session D: Superconducting and hybrid quantum devices

Chair : Makoto Kohda

13:00-

“Superconductive coupling and Josephson diode effect in topological insulator-based multi-terminal hybrid structures”

Thomas Schäpers (Forschungszentrum Jülich)

13:30-

“Transport properties of magnetic topological insulators grown by molecular beam epitaxy”

Jan Karthein (Forschungszentrum Jülich)

13:45-

“TBD”

Tomohiro Otsuka (Tohoku Univ.)

14:15-

“Development of Sidewall Spacer Passivated NbN/AlN/NbN Josephson Junctions for Superconducting Qubits”

Koki Honda (Tohoku Univ.)

14:30- Coffee break

15:00-

“Superconducting qubits based on nitride superconductors”

Hiroataka Terai (NICT)

15:30-

“Exotic superconducting transport in Josephson junctions derived from Andreev molecules”

Sadashige Matsuo (Inst. of Science Tokyo)

16:00-

“Innovative Synthesis and Quantum Applications of Graphene and Low-Dimensional Materials“

Toshiaki Kato (Tohoku Univ.)

16:30-

“Flux-bias-free flux qubit driven by low- J_c SFQ driver on monolithically integrated circuit”

Duong Pham (Tohoku Univ.)

16:45-

Closing

Masafumi Shirai (Tohoku Univ.)

Invited speakers' list

Norikazu Mizuochi, Kyoto Univ., e-mail: mizuochi@scl.kyoto-u.ac.jp
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Contributed speakers' list

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