

Program of Quantum Materials Symposium 2023

Feb. 6 (Monday)

	Opening	Chair: Chan-Ho Yang Korea Advanced Institute of Science and Technology
8:55-9:10	Welcome remarks	Yunkyu Bang Asia Pacific Center for Theoretical Physics Jaejun Yu Seoul National University
Session Mo-I	Quantum magnetism	Chair: Kwang-Yong Choi Sungkyunkwan University
9:10-9:50	Emergence of mesoscale quantum phase transitions in a ferromagnet	Matthias Vojta Technische Universität Dresden
9:50-10:20	Quasi 2D square lattice $S = 2$ antiferromagnet $\text{Ba}_2\text{FeSi}_2\text{O}_7$: Magnetic properties and quantum transition	Jae-Hoon Park Pohang University of Science and Technology
10:20-10:50	Dirac magnons and anomalous magnon damping in van der Waals honeycomb ferromagnets	Jae-Ho Chung Korea University
Coffee break		
Session Mo-II	Twisted layers	Chair: Gun Sang Jeon Ewha Womans University
11:20-12:00	Orbital Chern insulators at integer and half-integer fillings of a moiré superlattice in twisted monolayer-bilayer graphene	Hryhoriy Polshyn Institute of Science and Technology Austria
12:00-12:30	Electronic structures of twisted black phosphorus	Hyoungh Joon Choi Yonsei University
Lunch break		
Session Mo-III	Quantum algorithms	Chair: Hyoungh Joon Choi Yonsei University
14:00-14:30	Solving high-temperature superconductivity with quantum	Kwon Park Korea Institute for

	computers: Efficient quantum algorithm for resonating valence bond and spin liquid states	Advanced Study
14:30-15:00	Two-stage screening in Hund metals and heavy fermions	Seung-Sup B. Lee Seoul National University
15:00-15:30	Dipole Condensations in Tilted Bose-Hubbard Chains	Hyun-Yong Lee Korea University (Sejong)
Coffee break		
Session Mo-IV	Functionalities	Chair: Jae-Hoon Park Pohang University of Science and Technology
16:00-16:30	A Quantum Theory of Triboelectricity: The Precise Role of Electrophilicity and Heat Conduction	Yong-Hyun Kim Korea Advanced Institute of Science and Technology
16:30-17:00	Effects of dynamical correlation on spin susceptibility and superconducting symmetries in Sr_2RuO_4	Chang-Youn Moon Korea Research Institute of Standards and Science
17:00-17:30	Graphene transistor to study quantum materials : $\alpha\text{-RuCl}_3$, $\text{Cr}_2\text{Ge}_2\text{Te}_6$ and functional oxides	Dongseok Suh Sungkyunkwan University

Feb. 7 (Tuesday)

Session Tu-I	Ferroics	Chair: Chan-Ho Yang Korea Advanced Institute of Science and Technology
9:10-9:50	Topological Surface Magnetism and Antiferromagnetic Domain Control in Linear Magnetolectrics	Sang-Wook Cheong Rutgers University
9:50-10:20	Atomic semiconductor via flat phonon bands in HfO_2	Jun Hee Lee Ulsan National Institute of Science and Technology
10:20-10:50	Flexoelectric polarizing and control of a ferromagnetic metal	Daesu Lee Pohang University of Science and Technology

Coffee break		
Session Tu-II	Correlative phenomena	Chair: Sang-Wook Cheong Rutgers University
11:20-12:00	Collective states in infinite layer oxides	Harold Y. Hwang Stanford University
12:00-12:30	Kondo interaction in FeTe and its potential role in the magnetic order	Changyoung Kim Seoul National University
Lunch break		
Session Tu-III	Superconductors	Chair: Eun-Gook Moon Korea Advanced Institute of Science and Technology
14:00-14:30	Topological superconductivity in twisted double-layer high- T_c cuprates: Theory and experimental signatures	Marcel Franz University of British Columbia
14:30-15:00	Superconductivity enhanced in the vicinity of fluctuating orders; tale of two layered systems	Kee Hoon Kim Seoul National University
15:00-15:30	Unconventional spin transport in superconductors	Se Kwon Kim Korea Advanced Institute of Science and Technology
Coffee break		
Session Tu-IV	Theory strategy	Chair: Kwon Park Korea Institute for Advanced Study
16:00-16:30	Machine Translation of Universal "Language" for Fermionic Systems	Gil Young Cho Pohang University of Science and Technology
16:30-17:00	A machine learning approach to identify magnetic order by electron-hole excitation spectra	Ara Go Chonnam National University
17:00-17:30	Geometric aspects of flat bands with a singularity: from bulk to boundary	Jun-Won Rhim Ajou University

Feb. 8 (Wednesday)

Session We-I	Heavy fermions	Chair: Tuson Park Sungkyunkwan University
9:10-9:50	Validating first-principles derived exchange interactions for f -electron materials ($CeIn_3$)	Filip Ronning Los Alamos National Laboratory
9:50-10:20	Ferromagnetic cluster-glass behavior in Kondo lattice systems $Yb_{1-x}Y_xCuAs_2$	Eundeok Mun Simon Fraser University
10:20-10:50	Doping effects and quantum criticality in heavy-fermion superconductors	Soonbeom Seo Changwon National University
Coffee break		
Session We-II	Kitaev physics	Chair: Je-Geun Park Seoul National University
11:20-12:00	Majorana fermions and half-integer thermal quantum Hall effect in a quantum magnet	Yuji Matsuda Kyoto University
12:00-12:30	Identification of a Kitaev Quantum Spin Liquid by Magnetic Field Angle Dependence	Kyusung Hwang Korea Institute for Advanced Study
Lunch break		
Free Discussion		
Session Poster		Chairs: Eun-Gook Moon & Chan-Ho Yang Korea Advanced Institute of Science and Technology
16:00-17:30	Poster presentations	
18:00-19:30	Banquet	

Feb. 9 (Thursday)

Session Th-I	Kagome lattices	Chair: Jun Sung Kim Pohang University of Science and Technology
9:10-9:50	Field-switchable chiral transport in the Kagome superconductor CsV_3Sb_5	Philip J.W. Moll Max Planck Institute for the

		Structure and Dynamics of Matter
9:50-10:20	Magnetization plateaus in the $s=1/2$ Kagome Heisenberg antiferromagnet	Kwang-Yong Choi Sungkyunkwan University
10:20-10:50	Monolayer Kagome Metals	Eun-Gook Moon Korea Advanced Institute of Science and Technology
Coffee break		
Session Th-II	Materials topology	Chair: Tae-Hwan Kim Pohang University of Science and Technology
11:20-12:00	A Quantum Ruler for Topology and Quantum Geometry in Moiré Superlattices	Joseph A. Stroscio National Institute of Standards and Technology
12:00-12:30	Quantum transport evidence of isolated topological nodal-line fermions	Jun Sung Kim Pohang University of Science and Technology
Lunch break		
Session Th-III	Charge clouds	Chair: Joseph A. Stroscio National Institute of Standards and Technology
14:00-14:30	Origin of chirality in the triple-q charge density wave semimetal $1T\text{-TiSe}_2$	B. J. Kim Pohang University of Science and Technology
14:30-15:00	On the origin of charge-density-wave in two-dimensional materials	Seung-Ho Baek Changwon National University
15:00-15:30	Electrides with anionic electrons: Quantum innovation in "2D materials", "Semiconductor" and "Metal"	Sung Wng Kim Sungkyunkwan university
Coffee break		
Session Th-IV	Magneto-transport remoted	Chair: Kee Hoon Kim Seoul National University
16:00-16:30	Chiral superconductivity in UTe_2 probed by nodal gap structures	Takasada Shibauchi University of Tokyo

16:30-17:00	Exotic gapless superconducting states in Nb thin films observed under an in-plane magnetic field	Jae Hoon Kim Yonsei University
17:00-17:30	Magneto-thermal transport in Honeycomb Quantum Spin Liquids	Hidenori Takagi Max Planck Institute for Solid State Research

Feb. 10 (Friday)

Session Fr-I	Geometry and dynamics	Chair: Harold Y. Hwang Stanford University
9:10-9:50	The geometry and topology of nonlinear responses in quantum materials	Naoto Nagaosa University of Tokyo
9:50-10:20	Pseudoparticle vertex impurity solver for quantum impurity models	Aaram J. Kim Daegu Gyeongbuk Institute of Science and Technology
10:20-10:50	Strong magnetostriction effect observed in ultrafast lattice dynamics of SrRuO ₃ based superlattices	Kyungwan Kim Chungbuk National University
Coffee break		
Session Fr-II	Beyond electrons	Chair: Naoto Nagaosa University of Tokyo
11:20-12:00	Development and application of thermal Hall measurement	Je-Geun Park Seoul National University
12:00-12:30	Correlative ionic transport across an oxygen-vacancy ordering transition	Chan-Ho Yang Korea Advanced Institute of Science and Technology
12:30-13:00	Closing ceremony	