

KAVLI INSTITUTE FOR THEORETICAL PHYSICS
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KITP Conference: Topological Quantum Matter: From Fantasy to Reality

(Sep 30 - Oct 3, 2019)

Coordinators: Nic Shannon, Ronny Thomale, and Roser Valenti

Monday, Sep 30, 2019

Session Chair: Nic Shannon (OIST)

8:50am	Mark Bowick (KITP)	Welcome
9:00am	Liang Fu (MIT, MA)	Thermoelectric and nonlinear Hall effects
9:45am	Gil Refael (Caltech, IQIM)	Floquet second-order topological insulators from nonsymmorphic space-time symmetries
10:30am		Morning Break
11:00am	Lucile Savary (ENS, Lyon)	Transport in correlated magnets
11:45am	Radu Coldea (U Oxford)	Inelastic neutron scattering studies of touching points in magnon bands
12:30pm		Lunch Break

Session Chair: Andriy Nevidomskii (Rice)

2:00pm	Taylor L. Hughes (U Illinois)	Electric multipole insulators
2:45pm	Michael Levin (U Chicago)	Bridging the gap between lattice models and Topological Quantum Field Theories
3:30pm		Afternoon Break
4:00pm	Marcel Franz (UBC)	Diagnosing quantum chaos in many-body systems using entanglement as a resource
4:45pm	Yi Li (JHU)	Monopole harmonic orderings in Weyl semi-metals
5:30pm		SHUTTLE TO BWSCI

Tuesday, Oct 01, 2019

Session Chair: Roser Valentí (U Frankfurt)

9:00am	Jonathan Simon (U Chicago)	Making Interacting Topological Matter from Light
9:45am	Emil Bergholtz (Stockholm U)	Exceptional Topology of non-hermitian Systems

10:30am **Morning Break**

11:00am Leon Balents (KITP) Quantum anomalous hall effect in twisted bilayer graphene

11:45am Young Lee (Stanford U) Materializing rival ground states on the spin=1/2 kagome lattice: quantum spin liquid, spin ordered, and valence bond crystal states

12:30pm **Lunch Break**

Session Chair: Ciarán Hickey (THP-Koeln)

2:00pm Mikael Rechtsman (Penn State) Observation of topological solitons and topological slow light

2:45pm Sebastian Huber (ETH) Magneto-transport, axial fields and what acoustics can teach us about Weyl semimetals

3:30pm **Afternoon Break**

4:00pm Yuji Matsuda (U Tokyo) Half-integer quantized anomalous thermal Hall effect in the Kitaev material α -RuCl₃

4:45pm Yukitoshi Motome (U Tokyo) Fractional spin dynamics in Kitaev magnets

5:30pm **RECEPTION-KITP Courtyard**

6:00pm **SPECIAL EVENTS DINNER-KITP Courtyard**

8:00pm **SHUTTLE TO BWSCI**

Wednesday, Oct 02, 2019

Session Chair: Masaki Oshikawa (ISSP-Tokyo)

9:00am Michael Pretko (Boulder) Fractons: the road to reality

9:45am Shinsei Ryu (U Chicago) Effective field theory approach to topological Floquet systems

10:30am **Morning Break**

11:00am Gang Chen (Fudan U) Multipolar frustration instead of geometrical frustration

11:45am Bruce D. Gaulin (McMaster U) Neutron scattering studies of quantum spin Ice candidate pyrochlore magnets

12:30pm **Lunch Break**

Session Chair: Giorgio Sangiovanni (ITPA Würzburg)

2:00pm Vincenzo Vitelli (U Chicago) Dualities and Non-Abelian mechanics
 2:45pm Mohammad Hafezi (UMD) Synthesized topology: from photons to matter

3:30pm **Afternoon Break**

4:00pm James Analytis (Berkeley) Frustration, chirality and electrically switchable antiferromagnetism in FeNbS₂

4:45pm Hae-Young Kee (U Toronto) Microscopic mechanism for higher-spin Kitaev model

5:30pm **RECEPTION-KITP Courtyard**

6:00pm **SPECIAL EVENTS DINNER-KITP COURTYARD**

8:00pm **SHUTTLE TO BWSCI**

Thursday, Oct 03, 2019

Session Chair: Tanusri Saha-Dasgupta (IACS)

9:00am Roderich Mössner (MPI-PCS) The surprising usefulness of spin waves

9:45am Bella Lake (Helmholtz-Zentrum) Neutron scattering investigation of 2 spin liquid candidate

10:30am **Morning Break**

11:00am Judit Romhányi (OIST, Okinawa) Topologically nontrivial excitations and transverse transport in quantum magnets

11:45am Bela Bauer (UCSB) Topologically protected braiding in a single wire using Floquet Majorana modes

12:20pm Organizers-Summary and Outlook

12:30pm **Lunch Break**

2:00pm **CONFERENCE END-SHUTTLE TO BWSCI *Also available to SB Airport and SB Airbus, Goleta location (See Registration Desk BEFORE THURSDAY to sign up.)**