

**KAVLI INSTITUTE FOR THEORETICAL PHYSICS**  
**www.kitp.ucsb.edu**

# **KITP Conference: Spintronics Meets Topology in Quantum Materials**

(Nov 12-16, 2019)

**Coordinators: Andrei Bernevig, Rembert Duine, Victor Galitski**

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## **Tuesday, Nov 12, 2019**

**Topological Matter, Quantum Criticality & Hydrodynamics I, Chair: Victor Galitski (JQI Maryland)**

8:50am	Lars Bildsten (KITP)	Welcome
9:00am	Haim Beidenkopf (Weizmann)	Fermi arc protection in TaAs and their variability in Co <sub>3</sub> Sn <sub>2</sub> S <sub>2</sub>
9:45am	Maria Vozmediano (CSIC)	Chiral waves in Weyl semimetals
10:30am		<b>Morning Break</b>
11:00am	Nicolas Regnault (ENS, Paris)	Topological materials: from a catalogue to machine
11:45am	Roni Ilan (Tel-Aviv U)	Effects of deformations in Weyl Materials: From anomalous transport to sound absorption
12:30pm		<b>Lunch Break</b>

**Spintronics & Quantum Magnetism I, Chair: Maria Vozmediano (CSIC)**

2:00pm	Christian Hess (IFW Dresden)	Heat transport of quantum spin excitations: magnons, spinons, and Majorana Fermions
2:45pm	Gerrit Bauer (Tohoku U)	Spintronics with Magnetic Insulators
3:30pm		<b>Afternoon Break</b>
4:00pm	Wei Han (ICQM Beijing)	Spin current as a Probe of Quantum Materials
4:45pm	Edouard Sonin (Jerusalem U)	Spin superfluidity in magnetically ordered solids and spinor BEC
5:30pm		<b>SHUTTLE TO BWSCI</b>

## **Wednesday, Nov 13, 2019**

**Topological Matter, Quantum Criticality & Hydrodynamics II, Chair:  
Gerrit Bauer (Tohoku U)**

- 9:00am Yaroslav Tserkovnyak (UCLA) Putting magnetic vortices to work in spintronics
- 9:45am Maia Vergniory (DIPC) Topological semi-metals: from theoretical prediction to experimental realization
- 10:30am **Morning Break**
- 11:00am Marco Polini (IIT, Genova) Hall effect in viscous electron fluids
- 11:45am Ady Stern (Weizmann) Josephson controlled topological superconductivity
- 12:30pm **Lunch Break**

**Spintronics & Quantum Magnetism II, Chair: Helen Gomonay (Mainz)**

- 2:00pm Daichi Hirobe (Tohoku U) Spin Seebeck effects in one-dimensional spin liquids
- 2:45pm Joshua Cohn (U Miami) Magnon heat conduction and spin-Seebeck effect in helimagnetic Cu (2)OSeO (3)
- 3:30pm **Afternoon Break**
- 4:00pm Tero Heikkilä (U Jyväskylä) Josephson-type dynamics in magnetic domain walls - inertial effects from the conduction electrons
- 4:45pm Fabian Heidrich-Meisner (U Goettingen) Finite-temperature transport in 1d quantum lattice systems: From quantum magnets to ultra-cold atomic gases
- 5:30pm **RECEPTION-KITP COURTYARD**
- 6:00pm **SPECIAL EVENTS DINNER-KITP COURTYARD**
- 8:00pm **SHUTTLE TO BWSCI**

**Thursday, Nov 14, 2019**

**Topological Matter, Quantum Criticality & Hydrodynamics III, Chair:  
Andrei Bernevig (Princeton, Halle & Berlin)**

- 9:00am Aharon Kapitulnik (Stanford) Time Reversal Symmetry Breaking and Topological Superconductivity
- 9:45am Oskar Vafek (Florida State) Strong coupling phases of partially filled twisted bilayer graphene narrow bands
- 10:30am **Morning Break**

- 11:00am Andrew Lucas (Boulder) Electron hydrodynamics with a polygonal Fermi surface
- 11:45am Leonid Glazman (Yale U) Topology of the Fermi surface wavefunctions and magnetic oscillations in metals
- 12:30pm **Lunch Break**

### **Spintronics & quantum magnetism III**

- 2:00pm Christian Pfleiderer (TUM) Emergence, nucleation and stability of skyrmion lattice order
- 2:45pm Karin Everschor-Sitte (Mainz U) Skyrmions for Unconventional Computing
- 3:30pm **Afternoon Break**

- 4:00pm Nandini Trivedi (Ohio State) Quantum Spin Liquids: Signatures of Fractionalization
- 4:45pm Misha Titov (Radboud U) Anisotropy from spin orbit interaction in 2D magnets: new insights to chiral magnetism and magnetization dynamics

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

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

8:00pm **SHUTTLE TO BWSCI**

## **Friday, Nov 15, 2019**

### **Session VII: New Materials, Chair: Nandini Trivedi (Ohio)**

- 9:00am Andrea Young (UCSB) Twisted Bilayer Graphene
- 9:45am Claudia Felser (MPI) Magnetic Weyl Semimetals!
- 10:30am **Morning Break**
- 11:00am Stuart Parkin (MPI) Chiraltronics: Spin Textures
- 11:45am Marcos Guimaraes (Groningen U) Chiral Spin Spirals at the Surface of a van der Waals Ferromagnet
- 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 FRIDAY to sign up.)**