

# Quantum Materials Symposium 2019

## PROGRAMME

### Monday 23 September 2019

8:15-8:45 Registration, posters displayed

8:45-9:00 **Paolo Radaelli**, Oxford Physics  
*Welcome and updates on Oxford Quantum Materials*

#### **A. Magnetism and Model Systems (Chair: Leon Balents)**

9:00-9:05 **Leon Balents**, KITP, UCSB  
Introduction to the session "Magnetism and Model Systems"

9:05-9:30 **Hide Takagi**, Max Planck Institute Stuttgart  
*Exotic spin-orbital entangled phases in 5d and 4d transition metal oxides*

9:30-9:55 **Roser Valenti**, Goethe University Frankfurt  
*Recent progress on field- and pressure-induced phases in spin-orbit-coupled frustrated models and materials*

9:55-10:20 **Chris Stock**, University of Edinburgh  
*Spin-wave directional anisotropies in langasite without antisymmetric exchange*

10:20-10:50 Coffee break

10:50-11:15 **Chris Wiebe** University of Winnipeg, University of Edinburgh  
*High pressure routes to new pyrochlores and exotic magnetism*

11:15-11:40 **Lucile Savary**, CNRS, ENS Lyon  
*SU(4) antiferromagnetism and dimers*

11:40-12:10 **Leon Balents**, KITP, UCSB  
Discussion leader

12:30-13:30 Lunch Somerville College / Posters Martin Wood and Beecroft foyer

**GROUP PHOTO**

## **B. Structure and Dynamics (Chair: Simon Wall)**

13:40-14:45 **Simon Wall**, ICFO Introduction to the session "Structure and Dynamics"

14:45-14:10 **Peter Abbamonte**, University of Illinois, Urbana-Champaign  
*Universal CDW dynamics in  $La_{2-x}Ba_xCuO_4$  measured with time-resolved RIXS*

14:10-14:35 **Lara Benfatto**, ISC-CNR and Sapienza University of Rome, Italy  
*Unconventional spectroscopies of superconducting collective modes*

14:35-15:00 **Giacomo Ghiringhelli**, Politecnico di Milano  
*Charge density waves and charge density fluctuations in cuprates*

15:00-15:25 Coffee break

15:25-15:50 **Silke Bierman**, Ecole Polytechnique Paris  
*Electronic structure of  $Sr_2IrO_4$ : a dynamical mean field view*

15:50-16:15 **James McIver**, Max Planck Institute for the Structure and Dynamics of Matter  
*Femtosecond science on-chip: Capturing light-induced anomalous Hall currents in graphene*

16:15-16:45 **Simon Wall**, ICFO  
*Disorder in the ultrafast phase transition in  $VO_2$  and Discussion Leader*

16:45-18:00 Poster session and Drinks

18:00-19:00 Dinner, Somerville College

## **19:30-20.30 Public Lecture**

**Stephen Blundell**, University of Oxford

*The Many Universes of Quantum Materials*

Book your tickets at: [bit.ly/qmpl2019](https://bit.ly/qmpl2019)

## Tuesday 24 September 2019

### C. Devices and Interface Phenomena (Chair: R. Ramesh)

9:00-9:05 **R. Ramesh**, University of California, Berkeley  
Introduction to the session "Devices and Interface Phenomena"

9:05-9:30 **Stuart Parkin**, Max Planck Institute Halle  
*TBA*

9:30-9:55 **Jian Shen**, Fudan University  
*Complex Magnetic Domain Structures in Oxides: Physical Origin and Device Applications*

9:55-10:20 **Jochen Manhart**, Max Planck Institute for Solid State  
*Dissipationless Charge Transport without Superconductivity?*

10:20-10:50 Coffee break

10:50-11:15 **Sasi Manipatruni**, Kepler Computing  
*Building the next ubiquitous computing with quantum materials*

11:15-11:40 **Felix Casanova**, CIC nanoGUNE  
*Spin-to-charge current conversion for logic devices*

11:40-12:10 **R. Ramesh**, University of California, Berkeley  
Discussion Leader

12:30-13:30 Lunch Somerville College/Posters Martin Wood and Beecroft foyer

### D. Topology (Chair: Claudia Felser)

13:40-13:45 **Claudia Felser**, Max Planck Institute for Chemical Physics of Solids  
Introduction to the session "Topology"

13:45-14:10 **Andrei Bernevig**, Freie Universität Berlin Princeton University  
*Hinge Arcs and Dirac Semimetals: the first spectroscopic consequence of Dirac crossings*

14:10-14:35 **Ashvin Vishwanath**, Harvard University  
*Superconductivity and Topology in Moire Materials*

14:35-15:00 **Sang Cheong**, Rutgers University  
*Topological vortex domains in quantum materials*

15:00-15:25 Coffee break

## **D. Topology (Chair: Claudia Felser)**

15:25-15:50 **Radu Coldea**, University of Oxford  
*Inelastic neutron scattering studies of touching points in magnon bands*

15:50-16:15 **Charles Tschirhart**, University of California Santa Barbara  
*Intrinsic quantized anomalous Hall effect in twisted bilayer graphene*

16:15-16:45 **Claudia Felser**, Max Planck Institute for Chemical Physics of Solids  
Discussion leader /*Topological materials science*

16:45-18:30 Poster session and Drinks

18:30 Conference Dinner, Wadham College

## **Wednesday 25 September 2019**

### **E. Superconductivity (Chair: Séamus Davis)**

9:00-9:05 **Séamus Davis**, University of Oxford  
Introduction to the session "Superconductivity"

9:05-9:30 **Andrey Chubukov**, University of Minnesota  
*Feedbacks from nematic order in FeSe*

9:30-9:55 - **Stephen Hayden**, Bristol University  
*Spin and charge correlations in superconductors*

9:55-10:20 **Tom Devereaux**, Stanford University  
*Bad Metallic Transport, CDWs, and Superconducting Pairing in the Hubbard Model*

10:20-10:50 Coffee break

10:50-11:15 **Suchitra Sebastian**, University of Cambridge  
*Unconventional superconductivity in high magnetic fields*

11:15-11:40 **Peter Hirschfeld**, University of Florida  
*Knight Shift and Leading Superconducting Instability From Spin Fluctuations in  $Sr_2RuO_4$*

11:40-12:10 **Séamus Davis**, University of Oxford  
Discussion leader

12:30-13:30 Lunch Somerville College