

# Program of the conference “Frontiers in Physics of Quantum Materials”

## Monday, June 23

- 09.00 – 09.15      Opening  
*Session chair: Rafael Fernandes*
- 09.15 – 09.55      Andrey Chubukov. Spin/valley orders and superconductivity in Bernal bilayer graphene
- 09.55 – 10.35      Leni Bascones. Heavy Fermions and Cascades in Twisted Bilayer Graphene: New Results
- 10.35 – 11.05      Coffee break
- 11.05 – 11.45      Matthias Scheurer. Superconductivity in chiral bands
- 11.45 – 12.25      Elio König. Topologically enabled superconductivity and possible applications to rhombohedral graphene
- 12.30 – 14.30      Lunch / Discussions
- Session chair: Igor Gornyi*
- 14.30 – 15.10      Harry Westfahl Jr. From Quantum Glasses to a Fourth-Generation Synchrotron Light Source: A Personal Journey Inspired by Joerg Schmalian
- 15.10 – 15.50      Markus Müller. New insight into quantum glasses: The mean field Heisenberg glass and its collective modes
- 15.50 – 16.20      Coffee break
- 16.20 – 17.00      Gabriel Kotliar. DFT+G and its surprising connection to DMFT

## Tuesday, June 24

- Session chair: Matthieu Le Tacon*
- 09.00 – 09.40      Paul Canfield. Collapsed tetragonal phase transitions as canaries
- 09.40 – 10.20      Premi Chandra. Light-Induced Orders that Oscillate in Space and Time
- 10.20 – 10.50      Coffee break
- 10.50 – 11.30      Peter Orth. Nonlinear interrogation of quantum materials: why higher order response tells you more
- 11.30 – 12.10      Cristian Batista. Kinetic Energy Frustration as a New Paradigm for Correlated Metals
- 12.15 – 14.30      Lunch / Discussions
- Session chair: Markus Garst*
- 14.30 – 15.10      Rastko Sknepnek. Active Matter as a framework for modelling physics of life
- 15.10 – 15.50      Sergey Syzranov. Hidden energy scale and the effects of quenched disorder in geometrically frustrated magnets
- 15.50 – 16.20      Coffee break
- 16.20 – 19.00      Poster session

## Wednesday, June 25

*Session chair: Alexander Mirlin*

- 09.00 – 09.40 Subir Sachdev. From a critical quantum spin liquid to the phase diagram of the cuprate high temperature superconductors
- 09.40 – 10.20 Peter Wölfle. Hidden charge order in strongly correlated electron systems
- 10.20 – 10.50 Coffee break
- 10.50 – 11.30 Steven Kivelson. Superpuddles
- 11.30 – 12.10 Erez Berg. Strange metallic transport in disordered strongly correlated systems

12.15 – 14.30 Lunch / Discussions

*Session chair: Elio König*

- 14.30 – 15.10 Natalia Perkins. Probing Fractionalized Excitations in Kitaev Spin Liquids via Phonon Dynamics
- 15.10 – 15.50 Piers Coleman. Fractionalization and Topology in higher dimensional Quantum Matter
- 15.50 – 16.20 Coffee break
- 16.20 – 17.00 Matthias Vojta. Fractionalized superconductivity from Majorana glue
- 17.00 – 17.40 Liliana Arrachea. Bogoliubov Fermi energies and topological properties of two-dimensional superconducting heterostructures

19.00 – ... Conference Dinner

## Thursday, June 26

*Session chair: Ilya Eremin*

- 09.00 – 09.40 Thomas Vojta. Critical behavior and amplitude mode at the superfluid-insulator transition in amorphous systems
- 09.40 – 10.20 Maxim Dzero. Schmid-Higgs mode in superconductors with pair-breaking scattering
- 10.20 – 10.50 Coffee break
- 10.50 – 11.30 Roland Willa. Finite-momentum pairing in the magnetic multi-band superconductor RbEuFe<sub>4</sub>As<sub>4</sub>
- 11.30 – 12.10 Laura Classen. Angle-tuned quantum criticality in moiré Dirac semimetals
- 12.15 – 14.30 Lunch / Discussions

*Session chair: Christoph Meingast*

- 14.30 – 15.10 Anna Böhmer. Orders and fluctuations in FeSe under physical and chemical pressure
- 15.10 – 15.50 Elena Hassinger. Two-phase superconductivity out of an unconventional order in CeRh<sub>2</sub>As<sub>2</sub>
- 15.50 – 16.20 Coffee break

*Session chair: Markus Garst*

- 16.20 – 17.00 Dan Sheehy. Analog gravity in condensed matter and cold atom systems
- 17.00 – 17.40 Sam Carr. Curious thermodynamics in frustrated Ising models

## Friday, June 27

*Session chair: Amir-Abbas Haghighirad*

- 09.00 – 09.40 Ilya Eremin. Superconducting instabilities in bilayer nickelates  
09.40 – 10.20 Roser Valenti. Why scanning tunneling spectroscopy of Sr<sub>2</sub>RuO<sub>4</sub> sometimes doesn't see the superconducting gap?  
10.20 – 10.50 Coffee break  
10.50 – 11.30 Hilary Noad. Stress-strain relation of quantum materials under uniaxial pressure  
11.30 – 12.10 Ian Fisher. Hyperfine interactions and quantum criticality near a field-tuned ferroquadrupole quantum critical point  
12.15 – 13.40 Lunch / Discussions

*Session chair: Davide Valentini*

- 13.40 – 14.20 Wulf Wulfhchel. Surprises in the superconductivity of the two-band superconductor Pb  
14.20 – 15.00 Alex Levchenko. Superconducting Diode Effect  
15.00 – 15.30 Coffee break  
15.45 – 17.30 *Physics colloquium (Gaede Lecture Hall):* P. Wolynes. Energy Landscapes: From Glasses to the Intelligence of Biomolecules  
17.30 – ... Reception (*Foyer of the Gaede Lecture Hall*).