Topology and Geometry Beyond Perfect Crystals



Monday 26 May 2025 - Friday 13 June 2025

Albano Building 3

Scientific Programme

Conference Schedule: Topology and Geometry Beyond Perfect Crystals Week 1

Monday, May 26

- **10:30-11:30**: Julie Karel - Probing topology in disordered quantum materials with magnetotransport studies

- **13:30-14:30**: Tomáš Bzdušek - Unraveling spectra and topology of hyperbolic lattices

- 15:00-16:00: Adolfo G. Grushin Colloquium: Topology and Geometry Beyond Perfect Crystals
- 17:00/18:00: Reception/Poster Session

Tuesday, May 27

- **10:30-11:30**: Alexander Cerjan - *Classifying material topology using matrix homotopy*

- **13:30-14:30**: Benjamin Wieder - *Geometry-Enforced Topological Chiral Fermions in Amorphous Chiral Metals*

- 15:00-16:00: Daniel Varjas - Isotropic 3D topological phases with broken time reversal symmetry

Wednesday, May 28

- 10:30-11:30: Pascal Simon From amorphous topological matter to impurities in superconductors
- **13:30-14:30**: Anne Nielsen Topology in quasicrystals, fractals, and finite systems

- 17:00/18:00: Dinner

Thursday, May 29

- Ascension Day (Holiday)

Friday, May 30

- **10:30-11:30**: Miguel Ángel Ramos - *Quest for amorphous superconductors of Bi-Sb alloys by irradiation with swift heavy ions*

- **13:30-14:30**: Paramita Dutta - *Effects of quasiperiodic sequences on superconductivity* Week 2

Monday, June 2

- **10:30-11:30**: B. Andrei Bernevig - *Twist to the M-ax(is): A new platform for twisting based on the M point*

- 13:30-14:30: Christophe Mora - Real space topology for moiré materials

Tuesday, June 3

- 10:30-11:30: Anton Akhmerov - Scattering theory of higher order topological phases

- **13:30-14:30**: Nurit Avraham - Visualizing intervalley coherent states in rhombohedral trilayer graphene

- 17:00/18:00: Reception/Poster Session

Wednesday, June 4

- **10:30-11:30**: Emil Bergholtz - Parafermions, topological crystals and exciton topological order in moiré superlattices

- **13:30-14:30**: Mohit Randeria - Andreev versus Tunneling Spectroscopy of Unconventional Flat Band Superconductors

Thursday, June 5

- **10:30-11:30**: Jose Lado - Solving correlated super-moire materials beyond one billion sites with tensor networks

- 13:30-14:30: Felix Flicker - Constrained Models Beyond Perfect Crystals

- 17:00/18:00: Dinner

Friday, June 6 [National Day]

- **10:30-11:30**: Pablo Jarillo-Herrero - *Next Generation Moiré Quantum Matter* Week 3

Monday, June 9

- **10:30-11:30**: Aires Ferreira - Bridging disorder and topology via large-scale real-space simulation of condensed matter: The open-source Quantum KITE initiative

- **13:30-14:30**: Alexander Mirlin - Scaling of many-body localization transitions: Fock-space and real-space quantum dynamics and spectral observables

Tuesday, June 10

- 10:30-11:30: Nandini Trivedi - Signatures of Anyon Braiding in nonlinear spectroscopy - 13:30-14:30: Christian Spånslätt Rugarn - "While my Hall bar gently heats" - Probing topological edge structures with thermal transport

- 17:00/18:00: Reception/Poster Session

Wednesday, June 11

- 10:30-11:30: Päivi Törmä - Two topics beyond perfect crystals: quantum geometry of evanescent surface states in rhombohedral graphite, and topological charges in quasicrystals
- 13:30-14:30: Julia Hannukainen - Local Topological Markers: A one-particle density matrix approach for characterizing the topology of interacting and disordered states

Thursday, June 12

- 10:30-11:30: Terry Loring - Quantifiable local topology protection in quantum materials

- 13:30-14:30: Hermann Schulz-Baldes - Detecting local topology with the spectral localizer

- 17:00/18:00: Dinner

Friday, June 13

- 10:30-11:30: Siddharth Parameswaran - Textured Exciton Insulators

- **13:30-14:30**: Andrej Mesaros - Extracting band topology from real-space response to impurities in TMD superconductors and semiconductors