

FLATBAND NETWORKS IN CONDENSED MATTER AND PHOTONICS

INTERNATIONAL WORKSHOP

Aug. 28 - Sep. 1, 2017

The electron band structure plays a crucial role in understanding the properties of the crystalline solids. An extreme case emerges for a completely dispersionless (flat) band, for which the kinetic energy of the electron is quenched. This appears to be a typical situation for a large variety of wave equations on the tight-binding networks, applicable to the noninteracting electrons, cold atoms, and light. Flatband networks admit compact localized eigenstates persisting due to the local network symmetries and destructive interference. Adding perturbations such as disorder, ac and dc external fields, many-body interactions leads to a plethora of new emergent states, which depend both on the topology of the original flat band and the type of perturbation.

This workshop will focus on new developments in this very active field, which include the novel classification schemes of flatband networks, flatband ferromagnetism, Anderson localization, frustrated spin systems, mobility edges, nonlinearity, as well as the experimental efforts to capture the flatbands and compact localized states in various systems, including the optical waveguide and exciton-polariton condensate networks.

Topics include:

- Strongly correlated spin, electronic and bosonic systems with flatbands
- Flatbands and disorder/nonlinearity
- Topological flatbands, other flatband systems, engineering and designs
- Experiments

Applications for participation are welcome, and should be made by filling the Application Form at the Workshop webpage by May 31, 2017. Accommodation costs and meals will be covered by PCS IBS. Limited funding is available to partially cover travel expenses.

For further information, please contact:
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Invited Speakers

Alexei Andreanov (Korea)
Emil Bergholtz (Sweden)
Arunava Chakrabarti (India)
Kedar Damle (India)
Ricardo Dias (Portugal)
Oleg Gendelman (Israel)
Zsolt Gulácsi (Hungary)
Sven Höfling (Germany)
Andreas Honecker (France)
Ludovic Jaubert (France)
Magnus Johansson (Sweden)
Hosho Katsura (Japan)
Dong-Hee Kim (Korea)
Daniel Leykam (Australia)
Zheng Liu (China)
Mykola Maksymenko (Israel)
Andreas Mielke (Germany)
Törmä Päivi (Finland)
Ioannis Rousochatzakis (USA)
Jürgen Schnack (Germany)
Pragya Shukla (India)
Alexander Szameit (Germany)
Akinori Tanaka (Japan)
Hidekazu Tanaka (Japan)
Robert Thomson (UK)
Tran Minh Tien (Vietnam)
Roser Valenti (Germany)
Rodrigo Vicencio (Chile)

Scientific Coordinators

Oleg Derzhko (Ukraine)
Sergej Flach (Korea)
Johannes Richter (Germany)

Organizers

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