

Topological Matter and Flat Bands (TMFB)

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The papers appearing in this special issue of the *Journal of Low Temperature Physics* are some of the contributions to the Topological Matter and Flat Bands (TMFB) Conference held in August 17–20, 2017, at the Felix-Bloch-Institute of the Faculty of Physics and Earth Sciences—University of Leipzig, Leipzig, Germany (<https://home.uni-leipzig.de/flatband/>). This Conference was a satellite conference of the 28th International Conference on Low Temperature Physics (LT28, <http://www.lt28.se>) that took place in Gothenburg (Sweden) between August 9–16, 2017.

The TMFB Conference continued the discussion on the importance of flat bands in solid-state physics, which started in Dresden in 2013 (Flat Bands: Design, Topology, and Correlations). It brought together experimentalists and theoreticians to discuss new examples in graphite/graphene and other systems, where the topology and flat bands may play a major role in triggering exceptional phenomena due to extremely singular density of states. The target audience consisted of researchers of graphene/graphite, those studying topological materials, topological superconductivity, interface superconductivity, and also the community of ultracold atom systems. The main topics presented and discussed during the conference included: Lifshitz transitions, superconductivity/superfluidity in systems with exact or approximate flat bands, two-dimensional superconductivity, nodal topological superconductivity, magnetism and magnetotransport, surface states, topological metals, Weyl fermions and points, transport phenomena, Fano resonances, quantum-Hall systems including superconductors, flat-band phononic lattices, flat bands in strongly interacting systems, as examples. There were 32 oral presentations and 11 posters.

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The organizing committee was integrated by the following scientists: T. Heikkilä (University of Jyväskylä, Finland), A. P. Schnyder (MPI f. Festkörperforschung Stuttgart, Germany), A. Soluyanov (ETH Zurich/Switzerland), P. Törmä (Aalto University, Finland), and G. Volovik (Aalto University, Finland /Landau Institute, Russia).

Following is the list of participants and invited speakers (indicated in bold):

Barzola-Quiquia	José	Universität Leipzig, Germany
Bianconi	Antonio	RICMASS, Italy
Dolgoplov	Valery T.	Institute of Solid State Physics, Chernogolovka, Russia
Drescher	Moritz	Universität Heidelberg, Germany
Esquinazi	Pablo	Universität Leipzig, Germany
Fulga	Ion Cosma	IFW Dresden, Germany
Gühne	Robin	Victoria University of Wellington, New Zealand
Heikkilä	Tero	University of Jyväskylä, Finland
Hyart	Timo	University of Jyväskylä, Finland
Ikegaya	Satoshi	Hokkaido University, Sapporo, Japan
Jaworowski	Błażej	Wrocław University of Science and Technology, Poland
Kanazawa	Ikuzo	Tokyo Gakugei University, Japan
Khodel	Victor	NRC Kurchatov Institute Moscow, Russia
Kunst	Flore	Stockholm University, Sweden
Kurilovich	Pavel	Moscow Institute of Physics and Technology (State University), Dolgoprudny, Russia
Kurilovich	Vladislav	Moscow Institute of Physics and Technology (State University), Dolgoprudny, Russia
Lötmann	Tomas	Uppsala University, Sweden
Menezes	Natalia	Utrecht University, Netherlands
Nissinen	Jaakko	Aalto University, Espoo, Finland
Nobukane	Hiro Yoshi	Hokkaido University, Sapporo, Japan
Ojajärvi	Risto	University of Jyväskylä, Finland
Park	Hee Chul	Institute for Basic Science, Daejeon, South Korea
Peotta	Sebastiano	Aalto University, Finland
Pickett	Warren	University of California Davis, USA
Precker	Christian	Universität Leipzig, Germany
Ramachandran	Ajith	Center for Theoretical Physics of Complex Systems, Dae- jeon, Republic of Korea
Regnault	Nicolas	CNRS, Paris, France
Rizzi	Mateo	Johannes Gutenberg University (JGU) Mainz, Germany
Rosenow	Bernd	Universität Leipzig, Germany
Sato	Masatoshi	Kyoto University, Japan
Shaginyan	Vasily	P.N. Lebedev Physical Institute, Moscow, Russia
Soluyanov	Alexey	ETH Zurich, Switzerland
Tamura	Shun	Nagoya University, Japan
Tanaka	Yukio	Nagoya University, Japan
Törmä	Päivi	Aalto University, Espoo, Finland
Vicencio	Rodrigo	Universidad de Chile, Santiago, Chile
Volovik	Grigory	Aalto University, Espoo, Finland
Winkler	Georg W.	ETH Zurich, Switzerland
Wulayimu	Maimaiti	Center for Theoretical Physics of Complex Systems, Dae- jeon, Republic of Korea

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