

Frontiers of Electronic Structure Theory: Focus on Topology and Transport

jointly organized by
the Thin Films Division (DS),
the Semiconductor Physics Division (HL),
the Magnetism Division (MA),
the Metal and Material Physics Division (MM),
the Surface Science Division (O), and
the Low Temperature Physics Division (TT)

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Topology plays an increasingly important role for a huge variety of natural phenomena in physics. Recent progress in understanding topology is based on the insight of Berry pertaining to adiabatic evolution of quantum systems and has led to the need for a new property of a Bloch state, the Berry curvature. The symposium will present a cross section of modern phenomena based on topological properties, like topological insulators and the whole zoo of topological transport coefficients: the trio of Hall, and quantum Hall effects, all in their conventional, anomalous, and spin flavor. The symposium reports on the response to this challenge by the ab initio community during the past decade.

The Symposium "Frontiers of Electronic Structure Theory" is complemented by five joint sessions hosted by the Surface Science Division (Tuesday–Thursday) and one hosted by the Metal and Material Physics Division (Monday). These sessions include five invited talks and more than 50 contributed talks and posters which cover the general field of computational materials science.

Overview of Invited Talks and Sessions

(Lecture room H1)

Invited Talks

SYES 1.1	Fri	9:30–10:00	H1	Intrinsic Transport Coefficients and Momentum Space Berry Curvatures — ●ALLAN H MACDONALD
SYES 1.2	Fri	10:00–10:30	H1	Berry phase linked spin-orbit torques in Ferromagnetic and Antiferromagnetic systems — ●JAIRO SINOVA
SYES 1.3	Fri	10:30–11:00	H1	Transport in Topological Insulators and Topological Superconductors: In Search of Majorana Fermions — ●EWELINA HANKIEWICZ
SYES 1.4	Fri	11:15–11:45	H1	Engineering Topological Quantum States: From 1D to 2D. — ●JELENA KLINOVAJA
SYES 1.5	Fri	11:45–12:15	H1	Skyrmions – Topological magnetization solitons for future spintronics — ●STEFAN BLÜGEL

Sessions

SYES 1.1–1.5	Fri	9:30–12:15	H1	Frontiers of Electronic Structure Theory: Focus on Topology and Transport
SYES 2.1–2.7	Mon	15:45–17:45	H51	Frontiers of Electronic Structure Theory: Focus on Topology and Transport
SYES 3.1–3.7	Tue	14:00–16:00	H24	Frontiers of Electronic Structure Theory: Focus on Topology and Transport I
SYES 4.1–4.10	Wed	10:30–13:00	H24	Frontiers of Electronic Structure Theory: Focus on Topology and Transport II
SYES 5.1–5.12	Wed	15:00–18:30	H24	Frontiers of Electronic Structure Theory: Focus on Topology and Transport III

SYES 6.1–6.9	Thu	10:30–13:15	H24	Frontiers of Electronic Structure Theory: Focus on Topology and Transport IV
SYES 7.1–7.13	Thu	15:00–18:15	H24	Frontiers of Electronic Structure Theory: Focus on Topology and Transport V
SYES 8.1–8.7	Wed	18:15–20:30	Poster A	Frontiers of Electronic Structure Theory: Focus on Topology and Transport