



Retreat-Meeting SPP2137

Skyrmionics Topological Spin Phenomena in Real-Space for Applications

Program

13. September 2023

- 13:00 Arrival & coffee
- 14:00 **Christian Pfleiderer**, Technical University of Munich (TUM)
Kirsten von Bergmann, University of Hamburg
Stefan Heinze, University of Kiel
Welcome & organizational matters
- 14:20 **Olena Gomony**, University of Mainz
Imprinting of vortices in antiferromagnets using ferromagnetic and magnetoelastic substrates
- 14:40 **Amal Aldarawsheh**, Forschungszentrum Jülich
Intrinsic Néel antiferromagnetic multimeronic spin textures in ultrathin films
- 15:00 **Mona Bhukta**, University of Mainz
Antiferromagnetic merons (half skyrmions) and bimerons in synthetic antiferromagnets
- 15:20 **Felix Nickel**, University of Kiel
Coupling of the triple-Q state to the atomic lattice by anisotropic symmetric exchange
- 15:40 **Tamer Karaman**, University of Augsburg
Exploring Chirality and Topology in Ferrimagnetic Multilayer Systems
- 16:00 Coffee break
- 16:30 Poster session
- 18:00 Dinner

14. September 2023

- 9:00 **Christian Pfeiderer**, Technical University of Munich
Magnetic skyrmions – state of the art – future directions
- 9:30 **Jan Masell**, Karlsruhe Institute of Technology
The non-trivial topology of antiskyrmions in 3D
- 9:50 **Nikolai Kiselev**, Forschungszentrum Jülich
Magnetic hopfion rings in cubic chiral magnets
- 10:10 **Hans Fangohr**, Max Planck Institute (MPSD), Hamburg
Towards Unified Micromagnetic Modelling (UMM) with Ubermag
- 10:30 Coffee break
- 11:00 **Jeison Fischer**, University of Cologne
Hydrogen toggling between exchange frustrated spin-spirals and elliptical skyrmions in Fe double layer on Ir(110)
- 11:20 **Tim Drevelow**, University of Kiel
Evidence for a conical spin spiral state in the Mn triple-layer on W(001)
- 11:40 **Nihad Abu Awwad**, Forschungszentrum Jülich
CrTe₂ as a two-dimensional material for topological magnetism in complex heterobilayers
- 12:00 **Maria Azhar**, University Duisburg-Essen
Screw dislocations - a new twist in the topology of chiral magnets
- 12:20 Lunch
- 13:20 Poster session
- 14:15 Informal get together regarding gender, diversity, family (in the lecture hall, in parallel to the poster session)
- 15:00 **Riccardo Ciola**, Karlsruhe Institute of Technology
Multipole magnons in topological skyrmion lattices resolved by cryogenic Brillouin light scattering microscopy
- 15:20 **Denis Mettus**, Technical University of Munich
Nucleation mechanisms of low-temperature skyrmion phase and equilibrium magnetic state in Cu₂OSeO₃
- 15:40 **Moritz Winter**, MPI CPfS, Dresden
Investigations of magnetic spin-textures in the antiskyrmion compound Mn_{1.4}PtSn by complementary microscopy and scattering experiments using LTEM and REXS

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- 16:00 **Andrii Savchenko**, Forschungszentrum Jülich
Domain walls with alternating chirality transparent for Lorentz TE microscopy
- 16:20 Coffee break
- 17:00 Young researcher discussion
- 18:30 Dinner

15. September 2023

- 9:00 Presentation of results from young researcher discussions and aspects regarding gender, diversity and family related topics
- 9:40 **Sumit Ghosh**, Forschungszentrum Jülich
Ultrafast optical generation of antiferromagnetic texture with conservation of topological charge
- 10:00 Coffee break
- 10:30 **Daniel Schick**, University of Konstanz
Two Levels of Topology in Skyrmion Lattice Dynamics
- 10:50 **Philipp Schwenke**, University of Kaiserslautern
Towards magnon-skyrmion coupling in resonants
- 11:10 **Sorn Sopheak**, Karlsruhe Institute of Technology
Fractonic features of magnetic skyrmions in chiral magnets
- 11:30 Organizational matters & Farewell (C. Pfeleiderer)
- 12:00 Lunch (end of meeting)

Posters

- **Aisha Aqeel**, Technical University of Munich (TUM)
Magnetization dynamics of chiral magnetic insulators
- **Frederik Austrup**, University of Hamburg
Stability of Skyrmions in a Ferromagnetic Background
- **Kirsten von Bergmann**, University of Hamburg
Nano-scale collinear multi-Q states driven by higher-order interactions
- **Venkata Krishna Bharadwaj**, University of Mainz
Skyrmions in synthetic antiferromagnets
- **Minh Duc Tran**, University of Mainz
Spatial uniformity of voltage-controlled magnetic anisotropy for skyrmion transistors
- **Simon Fröhlich**, University of Mainz
Comparing Thiele-model computer simulations and experiments of skyrmion lattices
- **Hauke Lars Heyen**, University of Greifswald
Current driven skyrmion movement and their electrical detection in Ta/CoFeB/MgO-Layers
- **Samuel Holt**, Max-Planck Institute (MPSD), Hamburg
Virtual experiments in computational magnetism: mag2exp
- **Sachin Krishnia**, University of Mainz
Influence of current on skyrmion dynamics
- **Martin Lang**, Max-Planck Institute (MPSD), Hamburg
Controlling stable Bloch points with electric instruments
- **Michael Lau**, University of Hamburg
AFM Skyrmion motion by sublattice displacement
- **Sina Mehboodi**, Technical University of Munich (TUM)
Spin Dynamics in Complex Magnetic Materials
- **Swapneel Amit Pathak**, Max-Planck Institute (MPSD), Hamburg
ML-based Magnetization Field Classification
- **Klaus Raab**, University of Mainz
Enhanced thermally-activated skyrmion diffusion with tunable effective gyrotropic force
- **Selcuk Sözeri**, Forschungszentrum Jülich
Ab-initio exploration of complex magnetism of frustrated Mn Layer on Ag(111) surface
- **Felix Zahner**, University of Hamburg
Towards AFM Skyrmions with STM