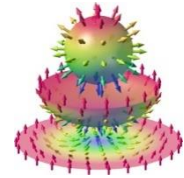


# Young Researchers' Retreat

21 – 25 April 2024, Dietmannsried, Hotel “das flax”

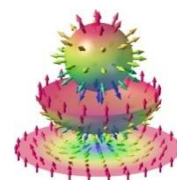


SPP2137 Skymionics  
Topological Spin Phenomena in Real-Space for Applications

## Program overview

| Time  | Sunday<br>21/04                   | Monday<br>22/04                                      | Tuesday<br>23/04                               | Wednesday<br>24/04                             | Thursday<br>25/04   |
|-------|-----------------------------------|--|--|--|---------------------|
|       |                                   | <i>Breakfast</i>                                     | <i>Breakfast</i>                               | <i>Breakfast</i>                               | <i>Breakfast</i>    |
| 09:00 |                                   | <b>Invited talk 1</b><br><b>István Kézsmárki</b>     | <b>Invited talk 3</b><br><b>Ulrich Nowak</b>   | Excursion<br>to Kempten                        | Semiplenary talk 1  |
| 09:45 |                                   |  |  |  | Semiplenary talk 2  |
| 10:00 |                                   | Contributed talk 1                                   | Contributed talk 7                             |  |                     |
| 10:30 |                                   | <i>Coffee</i>  | <i>Coffee</i>                                  |  | <i>Coffee</i>       |
| 11:00 |                                   | Contributed talk 2                                   | Contributed talk 8                             |  | Contributed talk 13 |
| 11:30 |                                   | Contributed talk 3                                   | Contributed talk 9                             |  | Closing Remarks     |
| 12:00 |                                   | <i>Lunch</i>   | <i>Lunch</i>                                   |  | <i>Lunch</i>        |
| 13:00 |                                   |  |  | <i>Lunch</i>                                   |                     |
| 14:00 |                                   | <b>Invited talk 2</b><br><b>Christina Psaroudaki</b> | <b>Invited talk 4</b><br><b>Nicolas Reyren</b> | <b>Invited talk 6</b><br><b>Yolita Eggeler</b> | Departure           |
| 15:00 |                                   | Contributed talk 4                                   | transition to<br>industry                      | Contributed talk 10                            |                     |
| 15:30 |                                   | <i>Coffee</i>  | <i>Coffee</i>                                  | <i>Coffee</i>                                  |                     |
| 16:00 |                                   | Contributed talk 5                                   | <b>Invited talk 5</b><br><b>Ankit Sharma</b>   | Contributed talk 11                            |                     |
| 16:30 |                                   | Contributed talk 6                                   | attocube systems AG                            | Contributed talk 12                            |                     |
| 17:00 | <i>Arrival<br/>&amp; Check in</i> | <i>Break</i>   | <i>Break</i>                                   | <i>Break</i>                                   |                     |
| 18:00 | <i>Dinner</i>                     | <i>Dinner</i>  | <i>Dinner</i>                                  | <i>Dinner</i>                                  |                     |
|       | Poster night                      | Poster night   | Poster night                                   | Poster night                                   |                     |

# Program



## Sunday 21/04

|             |  |
|-------------|--|
| Until 18:00 | <b>Arrival at the hotel “<a href="#">das flax</a>” and check in.</b><br><i>das flax allgäu</i><br><i>Schlosserstr. 4</i><br><i>87463 Dietmannsried</i> |
| 18:00       | <i>Dinner at the hotel (3-course buffet)</i>   |
| Until 23:59 | <b>Poster night.</b><br>Check out the posters, discuss, network, go to the bar.  |

## Monday 22/04

|               |  |
|---------------|--|
| Until 09:00   | <i>Breakfast at the hotel</i>  |
| 09:00 – 10:00 | <b>István Kézsmárki</b><br>University of Augsburg<br><i>Role of anisotropy in shaping skyrmions</i>  |
| 10:00 – 10:30 | <b>Sam Holt</b><br>Max Planck Institute for Structure and Dynamics of Matter (MPSD)<br><i>Discretisation Anisotropy in Micromagnetic Simulations</i>     |
| 10:30 – 11:00 | <i>Coffee</i>  |
| 11:00 – 11:30 | <b>Tamer Karaman</b><br>University of Augsburg<br><i>Real-space probing chirality and topology of rare-earth transition metal amorphous ferrimagnets</i> |
| 11:30 – 12:00 | <b>Alla Bezvershenko</b><br>University of Cologne<br><i>Directed movement of skyrmion lines in oscillating magnetic fields</i>                           |
| 12:00 – 14:00 | <i>Lunch at the hotel (2-course buffet)</i>  |
| 14:00 – 15:00 | <b>Christina Psaroudaki</b><br>Laboratoire de Physique de l’Ecole Normale Supérieure (LPENS)<br><i>Quantum Functionalities of Magnetic Skyrmions</i>     |
| 15:00 – 15:30 | <b>Sopheak Sorn</b><br>Karlsruhe Institute of Technology<br><i>Conservation laws and dynamics of topological spin textures</i>                           |
| 15:30 – 16:00 | <i>Coffee</i>  |
| 16:00 – 16:30 | <b>Andrii Savchenko</b><br>Forschungszentrum Jülich<br><i>Magnetic Toron in FeGe nanocylinder</i>  |

|               |   |
|---------------|---|
| 16:30 – 17:00 | <b>Nihad Abuawwad</b><br>Forschungszentrum Jülich<br><i>Electrical engineering of topological magnetism in two-dimensional heterobilayers</i> |
| 17:00 – 18:00 | <i>Break</i>  |
| 18:00         | <i>Dinner at the hotel (3-course buffet)</i>  |
| Until 23:59   | <b>Poster night.</b><br>Check out the posters, discuss, network, go to the bar.   |

## Tuesday 23/04

|               |   |
|---------------|---|
| Until 09:00   | <i>Breakfast at the hotel</i>   |
| 09:00 – 10:00 | <b>Ulrich Nowak</b><br>University of Konstanz<br><i>Stochastic dynamics of topological spin textures</i>  |
| 10:00 – 10:30 | <b>Selcuk Sözeri</b><br>Forschungszentrum Jülich<br><i>Ab-initio exploration of complex magnetism of frustrated Mn layer on Ag(111) surface</i>   |
| 10:30 – 11:00 | <i>Coffee</i>   |
| 11:00 – 11:30 | <b>Frederik Austrup</b><br>University of Hamburg<br><i>The dynamics of skyrmion shrinking</i>   |
| 11:30 – 12:00 | <b>Thomas Winkler</b><br>JGU Mainz<br><i>Skyrmion detection with U-Net</i>  |
| 12:00 – 14:00 | <i>Lunch at the hotel (2-course buffet)</i>   |
| 14:00 – 15:00 | <b>Nicolas Reyren</b><br>Laboratoire Albert Fert, CNRS, Thales, Université Paris-Sud<br><i>Metallic multilayers hosting skyrmions and cocoons</i> |
| 15:00 – 15:30 | <b>Discussion: Academia vs. Industry</b><br>with Nicolas Reyren and Ankit Sharma  |
| 15:30 – 16:00 | <i>Coffee</i>   |
| 16:00 – 17:00 | <b>Ankit Sharma</b><br>Attocube Systems AG<br><i>t.b.a.</i>   |
| 17:00 – 18:00 | <i>Break</i>  |
| 18:00         | <i>Dinner at the hotel (3-course buffet)</i>  |
| Until 23:59   | <b>Poster night.</b><br>Check out the posters, discuss, network, go to the bar.   |

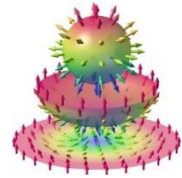
## Wednesday 24/04

|               |   |
|---------------|---|
| Until 09:00   | Breakfast at the hotel  |
| 09:00 – 13:00 | <b>Group excursion to Kempten</b><br><i>Let's explore the beautiful city of Kempten which is near our venue.<br/>Lunch-boxes will be prepared by the hotel.</i> |
| 13:00 – 14:00 | Lunch at the hotel (2-course buffet)  |
| 14:00 – 15:00 | <b>Yolita Eggeler</b><br>Karlsruhe Institute of Technology (KIT)<br><i>t.b.a.</i>   |
| 15:00 – 15:30 | <b>Sebastian Schneider</b><br>TU Dresden<br><i>In-situ correlation of the Hall effect with the occurrence of topological magnetic phases</i>                    |
| 15:30 – 16:00 | Coffee  |
| 16:00 – 16:30 | <b>Denis Mettus</b><br>TUM / MLZ<br><i>Skyrmion lattice order with moderate magnetocrystalline anisotropies in <math>Fe_{1-x}Co_xSi</math></i>                  |
| 16:30 – 17:00 | <b>Timo Schmidt</b><br>Universität Augsburg<br><i>Reversible Topological Transformations of Skyrmions and Trivial Bubbles</i>                                   |
| 17:00 – 18:00 | Break   |
| 18:00         | Dinner at the hotel (3-course buffet)   |
| Until 23:59   | <b>Poster night.</b><br>Check out the posters, discuss, network, go to the bar.   |

## Thursday 25/04

|               |   |
|---------------|---|
| Until 09:00   | Breakfast at the hotel  |
| 09:00 – 09:45 | <b>Kai Litzius</b><br>University of Augsburg<br><i>Controlling the stability, Nucleation and Dynamics of Skyrmions in van der Waals magnets</i> |
| 09:45 – 10:30 | <b>Valentin Ahrens</b><br>Technical University of Munich<br><i>How to Manipulate Skyrmions by Focused Ion Beam Irradiation</i>                  |
| 10:30 – 11:00 | Coffee  |
| 11:00 – 11:30 | <b>Krishnanjana Puzhekadavil Joy</b><br>University of Augsburg<br><i>Current induced nucleation of spin textures in aperiodic multilayers</i>   |
| 11:30 – 12:00 | <b>Closing Remarks</b><br><i>Final comments on organizational matters, feedback, farewell</i>   |
| 12:00         | Lunch at the hotel (2-course buffet)  |
|               | <b>Departure</b>  |

# Posters



Posters will be on display for the entire duration of the retreat. All participants are asked to present a poster, whether they give a talk or not. Posters can be used to summarize the contents of the talk or to present another topic. The authors decide how to use this additional, long-term exposed canvas.

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**Nihad Abuawwad**

Forschungszentrum Jülich

*Electrical engineering of topological magnetism in two-dimensional heterobilayers*

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**Valentin Ahrens**

Technical University of Munich

*How to Manipulate Skyrmions by Focused Ion Beam Irradiation*

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**Aisha Aqeel**

University of Augsburg

*Spin Dynamics in Complex Magnetic Materials*

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**Frederik Austrup**

Universität Hamburg

*The dynamics of Skyrmion shrinking*

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**Bjarne Beyer**

Christian Albrechts Universität zu Kiel

*Multi-Q state emerging from frustrated interlayer exchange interaction*

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**Tim Drevelow**

University of Kiel

*Complex non-collinear spin structure of a Mn double layer on Ag(111)*

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**Hauke Lars Heyen**

University of Greifswald

*Current driven skyrmion movement and their electrical detection in Ta/CoFeB/MgO*

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**Sam Holt**

Max Planck Institute for Structure and Dynamics of Matter (MPSD)

*Discretisation Anisotropy in Micromagnetic Simulations*

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**Tamer Karaman**

University of Augsburg

*Exploring Chirality and Topology in Ferrimagnetic Multilayer Systems*

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**Leo Kollwitz**

University of Kiel

*Monte Carlo algorithm enhanced by eigenexcitations of atomistic spin Hamiltonian*

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**Kai Litzius**

University of Augsburg

*Dynamic Investigation of Magnetic Skyrmions in the 2D van der Waals Magnet  $\text{Fe}_3\text{GeTe}_2$*

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**Jan Masell**

Karlsruhe Institute of Technology (KIT) & RIKEN

*Antiskyrmions are cooler than skyrmions*

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**Sina Mehboodi**

TUM

*Study of the chiral magnet  $\text{Cu}_2\text{OSeO}_3$  using resonant elastic X-ray scattering*

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**Denis Mettus**

TUM / MLZ

*Skyrmion lattice order with moderate magnetocrystalline anisotropies in  $\text{Fe}_{1-x}\text{Co}_x\text{Si}$*

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**Krishnanjana Puzhekadavil Joy**

Universität Augsburg

*Current induced nucleation of spin textures in aperiodic multilayers*

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**Andrii Savchenko**

Forschungszentrum Jülich

*Skyrmion bags in thin films of FeGe*

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**Timo Schmidt**

Universität Augsburg

*Reversible Topological Transformations of Skyrmions and Trivial Bubbles*

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**Sebastian Schneider**

TU 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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**Philipp Schwenke**

RPTU Kaiserslautern-Landau

*Towards cavity-based excitation of magnetization dynamics in a skyrmion host material*

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**Sopheak Sorn**

Karlsruhe Institute of Technology

*Conservation laws and dynamics of topological spin textures*

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**Selcuk Sözeri**

Forschungszentrum Jülich

*Ab-initio exploration of complex magnetism of frustrated Mn layer on Ag(111) surface*

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**Thomas Winkler**

JGU Mainz

*Machine-learning based spin structure detection*

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**Kauser Zulfiqar**

Max Planck Institute for Structure and Dynamics of Matter (MPSD)

*Spin-wave dispersion in a skyrmion chain*

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## Organizers

The organizing committee. If you find any mistakes or have questions, contact us:

**Aisha Aqeel**, University of Augsburg ([link](#))

**Venkata Krishna “V.K.” Bharadwaj**, JGU Mainz ([link](#))

**Mona Bhukta**, JGU Mainz ([link](#))

**Jan Masell**, Karlsruhe Institute of Technology (KIT) & RIKEN ([link](#))

**Alessandro Pignedoli**, University of Duisburg-Essen ([link](#))