



Workshop on Topology in Magnetic Materials, Herzberg, Switzerland – timetable

Posters listed on page 4 displayed during the entire event for discussions during breaks

**0<sup>st</sup> day – Monday 21, November 2022**

17:00 – 19:00 Arrivals (18:10 Bus from Aarau train station towards Herzberg)

**\*\* DINNER at HERZBERG for participants with on-site accommodation \*\***

**1<sup>st</sup> day – Tuesday 22, November 2022**

9:00 – 9:15 Welcome  
Organizers

SESSION 1: Introductory Lectures chair: Max Hirshberger

9:15 – 10:15 Magnetism in topological materials from insulators to metals (45+15 min)  
Cristian D. Batista

10:15 – 11:00 Coffee break

11:00 – 12:00 Experimental perspective on the field of magnetism in bulk topological materials (45+15 min)  
Joseph Checkelsky

**\*\* LUNCH BREAK for all participants \*\***

SESSION 2: Theory and Symmetry of Topological Materials chair: Cristian Batista & Ludovic Jaubert

13:30 – 14:15 Topology in condensed matter: electrons, spins, and their interplay (35+10 min)  
Markus Müller

14:15 – 15:00 Topological Quantum Chemistry procedure for magnetic systems (35+10 min)  
Maia G. Vergniory

15:00 – 15:20 Magnetoelectric Classification of Skyrmions (15+5 min)  
Sayantika Bhowal

15:20 – 16:00 Coffee break

16:00 – 16:45 Recent advances in DFT calculations of topological magnetic materials (35+10 min)  
Ryotaro Arita

16:45 – 17:30 Charge order and superconductivity in kagome materials (35+10 min)  
Titus Neupert

17:30 – 18:15 Exploring materials space at the speed of ICT: quantum spin Hall  
insulators, Weyl semimetals, and spin-layer-locking FETs (35+10 min)  
Nicola Marzari

**\*\* DINNER at HERZBERG for participants with on-site accommodation \*\***

**2<sup>nd</sup> day – Wednesday 23, November 2022**

**SESSION 3: Experiments and Methodology**      *chair: Shinichiro Seki*

8:30 – 9:15 Neutron and x-ray scattering studies of magnetic order in topological metals, semimetals and insulators (35+10 min)  
*Andrew Boothroyd*

9:15 – 10:00 Bulk measurements, electrical and thermal transport (35+10 min)  
*Max Hirschberger*

10:00 – 10:30 Coffee break

10:30 – 11:15 Magneto-optical study on topological magnets (35+10 min)  
*Youtarou Takahashi*

11:15 – 12:00 Quantitative magnetic imaging of skyrmions using transmission electron microscopy (35+10 min)  
*Andras Kovacs*

12:00 – 12:20 High-resolution magnetic imaging of skyrmions in 3D (15+5 min)  
*Bernd Rellinghaus*

**\*\* LUNCH BREAK for all participants \*\***

**SESSION 4: Multi-k spin textures, merons, skyrmions...**      *chair: Paul McClarty & Nicola Spaldin*

14:00 – 14:45 Beyond skyrmions: review & perspectives of alternative magnetic nano-objects (35+10 min)  
*Börge Göbel*

14:45 – 15:30 Latest discoveries of new skyrmion materials (35+10 min)  
*Shinichiro Seki*

15:30 – 16:10 Coffee break

16:10 – 16:55 Skyrmion fluid and bimeron glass, competition with a chiral spin liquid (35+10 min)  
*Ludovic Jaubert*

16:55 – 17:25  $\mu$ SR studies of spin fluctuations and critical behavior in (Mn,Fe)Si & MnGe (25+5 min)  
*Yasutomo Uemura*

17:25 – 17:45 Zero-field magnetic hedgehogs in a triangular Kondo lattice  $\text{CePtAl}_4\text{Ge}_2$  (15+5 min)  
*Soohyeon Shin*

**\*\* DINNER at HERZBERG for all participants \*\***

**TUTORIAL SESSION: Multi-k spin textures, merons, skyrmions...**      *chair: Maia Vergniory*

19:30 – 20:10 Magnetic symmetry for multi-k structure models (40 min)  
*Vladimir Pomjakushin*

20:10 – 20:50 Multi-k from neutron single diffraction + SANS (40 min)  
*Wolfgang Simeth*

20:50 – 21:30 X-ray resonant magnetic scattering and imaging (40 min)  
*Victor Ukleev*

**3<sup>rd</sup> day – Thursday 24, November 2022**

SESSION 5: Novel electronic responses due to complex magnetism     *chair: Joseph Checkelsky & Andrew Boothroyd*

8:30 – 9:15 Topological magnons (35+10 min)  
*Paul McClarty*

9:15 – 9:35 Thermal Evolution of Dirac Magnons in the Honeycomb Ferromagnet CrBr<sub>3</sub> (15+5 min)  
*Stanislav Nikitin*

9:35 – 10:20 Emergent transport phenomena and phase transitions in topological chiral magnets (35+10 min)  
*Yukako Fujishiro*

10:20 – 10:40 Magneto-optical Detection of Topological Contributions to the Anom. Hall Effect (15+5 min)  
*Sandor Bordacs*

10:40 – 11:00 Coffee break

11:00 – 11:45 Correlation and topology induced exotic transport phenomena in magnetic pyrochlore and half-Heusler compounds (35+10 min)  
*Kentaro Ueda*

11:45 – 12:30 Muon spin rotation insight into the topological kagome magnets & superconductors (35+10 min)  
*Zurab Guguchia*

**\*\* LUNCH BREAK for all participants \*\***

14:00 – 14:20 Untangling twin domains and discovery of unconventional quasiparticle in Fe<sub>3</sub>Sn<sub>2</sub>:  
Laser ARPES perspective (15+5 min)  
*Sandy Ekahana*

14:20 – 14:40 Observation of vortex rings in a bulk micromagnet using X-ray tomography (15+5 min)  
*Sebastian Gliga*

CLOSING SESSION: perspectives and new directions

*chair: Zurab Guguchia*

14:40 – 15:25 Future perspective on experimental phenomena involving topology and magnetism (35+10 min)  
*Yoshinori Tokura*

15:25 – 16:10 Future theoretical perspective on phenomena involving topology and magnetism (35+10 min)  
*Nicola Spaldin*

16:10 – 17:00 Coffee and departure (17:00 Bus from Herzberg towards Aarau train station)

## LIST OF POSTERS

Materials Discovery Lab: a new synthesis and crystal growth facility at the centre of the PSI-ETH collaboration  
*Monica Ciomaga Hatnean*

Application of growth techniques at distinctive conditions of extreme pressure, temperature, and reactive fluids for stabilisation of magnetic and topological materials  
*Dariusz Jakub Gawryluk*

Static and dynamical properties in CsNiCrF<sub>6</sub>  
*Amir Hemmatzade*

Commensurate locking of a nanometric skyrmion lattice in Gd<sub>3</sub>Ru<sub>4</sub>Al<sub>12</sub>  
*Max Hirschberger*

Competing magnetic phases in Dirac nodal line semimetals LnSbTe  
*Igor Plokhikh*

Bulk crystal growth of materials with possible novel quantum states with alpha-ThSi<sub>2</sub> and LaPtSi type of structure  
*Katja Pomjakushina*

Insight in to magnetic properties of the magnetic topological Insulator: MnSb<sub>2</sub>Te<sub>4</sub>  
*Manaswini Sahoo*

Coexistence of structural and magnetic phases in van der Waals magnet CrI<sub>3</sub>  
*Jose Luis Garcia-Muñoz*

Revealing the hidden electronic state in CsV<sub>3</sub>Sb<sub>5</sub>  
*Chennan Wang*

Topological transition among 4q and 3q Hedgehogs in a novel chiral insulator  
*Priya Ranjan Baral*

Weyl nodes induce anomalous Nernst effect in magnetic topological material MnBi<sub>4</sub>Te<sub>7</sub>  
*Michele Ceccardi*

Probing the Spin Waves in the Ferromagnetic Topological Metal Fe<sub>3</sub>Sn<sub>2</sub> by Resonant Inelastic X-ray Scattering  
*Wenliang Zhang*

Modulating the interfacial band structure of ultrathin La<sub>0.8</sub>Sr<sub>0.2</sub>MnO<sub>3</sub> in multiferroic heterostructures  
*Federico Stramaglia*

Complementary investigations of magnetic textures in the antiskyrmion compound Mn<sub>1.4</sub>PtSn with SAREXS and LTEM  
*Moritz Winter*

Ultrafast structural dynamics of an electromagnon in multiferroic hexaferrite  
*Gérard Perren*

Ce<sub>2</sub>Hf<sub>2</sub>O<sub>7</sub> – a ‘dipole-octupole’ cerium pyrochlore  
*Victor Porée*