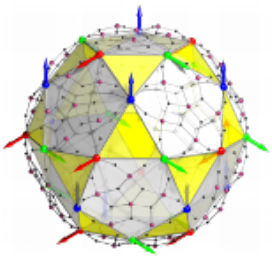

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Vortex Matter Beyond SANS: From Superconductivity to Skyrmions

Wednesday, 5 June 2019 17:00 (30 minutes)

Both superconducting vortex and skyrmion lattices in chiral magnets can be regarded as macroscopic lattices, formed by topological entities. Analogous to condensed matter, a large variety of phases is also observed for vortex and skyrmion matter, resembling their particle like character and reflecting the underlying physical properties. Moreover, both vortex and skyrmion matter represent ideal model systems for questions of general importance as topological stability and decay and also domain nucleation and growth. As for superconducting vortex matter, skyrmion melting transitions, skyrmion liquids and skyrmion glass phases are expected to exist in various materials.

Neutron scattering provides an ideal tool for the investigation of both vortex and skyrmion matter. Going beyond the standard SANS approach, we present an overview how to address the static and dynamic properties of superconducting vortex and skyrmion matter by means of neutron grating interferometry (nGI), neutron diffractive imaging (nGI), time-resolved small angle neutron scattering (TISANE), ultra small angle neutron scattering (USANS) and the neutron resonance spin echo spectroscopy technique (MIEZE).

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