



“Shining coherent X-rays on topological magnetic texture: Insight into static and fluctuating properties of skyrmions”

Speaker

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Abstract

Recently discovered skyrmions is an example of a topological phase that manifest in magnetic systems as a hexagonal lattice of spin vortices. Due to topological protection, skyrmions can be moved coherently over macroscopic distances with low currents compared to domain wall motion, and is therefore a potential candidate for low power storage and logic applications.

In this talk I will show that resonant X-ray scattering can shed new insights into this exotic phase. We will discuss our observation of the skyrmions using resonant soft X-ray scattering in multiferroic Cu_2SeO_3 . We have also studied skyrmion spin texture in an ultra-thin FeGd multilayer that shows perpendicular anisotropy. The FeGd sample exhibits a near perfect aligned stripe phase and a skyrmion phase within a small range of temperature and magnetic field. I will discuss effect of coherent X-ray beams and optical impulses to study applied field and time dependent fluctuations in the nanoscale. Finally, I will briefly show our recent studies on generating soft X-ray orbital angular momentum beams that has the potential to unravel new information about quantum properties in materials.

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Bose

Colloquium



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Hall