

Skyrmion lattice and spin torques in MnSi

In MnSi and related systems, a lattice of magnetic skyrmion lines has very recently been observed experimentally [1]. We discuss how this state can be stabilized [1] by thermal fluctuations and spin-orbit interactions in a chiral crystal. The Berry phase associated to the winding number of the skyrmions leads both to a topological Hall effect for the conduction electrons [2] and to forces on the Skyrmion lattice in the presence of a current.

[1] S. Mühlbauer et al. , Science 323, 915 (2009)

[2] A. Neubauer et al., Phys. Rev. Lett. 102, 186602 (2009)