Contribution ID: **79** Type: **Short talk**

Band structure of helimagnons in MnSi resolved by inelastic neutron scattering

Tuesday, 16 June 2015 12:40 (20 minutes)

A magnetic helix realizes a one-dimensional magnetic crystal with a period given by the pitch length. Its spin-wave excitations –the helimagnons –experience Bragg scattering off this periodicity leading to gaps in the spectrum that inhibit their propagation along the pitch direction defined by the wavevector. Using high-resolution inelastic neutron scattering the resulting band structure of helimagnons was resolved by preparing a single crystal of MnSi in a single magnetic-helix domain. At least five helimagnon bands could be identified that cover the crossover from flat bands at low energies with helimagnons basically localized along the pitch direction to dispersing bands at higher energies. In the low-energy limit, we find the helimagnon spectrum to be determined by a universal, parameter-free theory. Taking into account corrections to this low-energy theory, quantitative agreement is obtained in the entire energy range studied with the help of a single fitting parameter.

Primary author: KUGLER, Maximilian

Presenter: KUGLER, Maximilian

Session Classification: Quantum phenomena

Track Classification: Quantum phenomena