Experimental report

13/09/2018

Proposal: 5-54-242 **Council:** 4/2017

Title: Study of the skyrmionic interface at the surface of FeGe thin films

Research area: Physics

This proposal is a new proposal

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Samples: FeGe

Instrument	Requested days	Allocated days	From	To
SUPERADAM	5	5	06/04/2018	11/04/2018

Abstract:

A skyrmion is a vortex-like arrangement of spin which occurs under specific conditions of applied magnetic field and temperature and only in certain materials. The reason why skyrmionic systems have attracted a lot of interest in recent years, is the possibility to exploit them to develop new kinds of power efficient and high information density computing devices. The study of the skyrmion lattice in films, in this context, is particularly important, and has already led to striking results which show how the confinement of the skyrmion lattice in a 2-dimensional material affects its characteristics, enhancing its stability over a much wider region of temperature and applied magnetic field. Here we propose to study the interface of the skymion lattice depending on the depth of the samples, which will be FeGe films of two different thickness, and on the temperature and field applied by means of GISANS.

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The purpose of this experiment was to study the in depth profile of skyrmion tubes in FeGe thin films of different thicknesses, in order to study the effect of confinement of the skyrmion structure into quasi 2-dimensional materials.

Unfortunately the experiment was not successful since we have not been able to measure any magnetic signal from the samples. We believe that the roughness of the samples was too important.