



PhD position in Skyrmion Dynamics

In the Department of Physics, University of Mainz, a PhD position is immediately available in the field of Dynamics of Topological Spin Structures, such as Skyrmions. In particular we are working on novel effects that occur due to the interplay between spin currents and skyrmions and on the dynamic properties that are governed by the topology of the spin structure.

These nanoscale magnetic quasi-particles are very topical and highly interesting from scientific point of view (a large number of high impact publications have been published including our recent work *Nature Materials* 15, 501 (2016), which is in the top 0,1% of all cited papers in the field). Furthermore skyrmions are also promising for applications in data storage, logic and other microelectronic devices.

We combine advanced fabrication techniques (full clean room with lithography and pattern transfer techniques), a range of materials deposition tools (molecular beam epitaxy, sputtering, pulsed laser deposition, etc.) and a number of sophisticated characterization techniques. Low temperature magneto-transport measurements (10mK to room temperatures with fields up to 15T) will be carried out to detect skyrmion displacements and direct imaging by x-ray microscopy will be used to ascertain the spin dynamics. Structural analysis can be carried out using electron diffraction as well as x-ray diffraction and electron microscopy. Furthermore scanning probe microscopes are available for surface morphology investigations.

While the project will be primarily carried out at Mainz, the PhD student will have the opportunity to stay part of the time at leading partner institutions, such as MIT.

The physics department at the University of Mainz has been consistently ranked as one of the leading physics departments in Germany. In the recent Shanghai and CHE rankings it was selected for the excellence group in Europe and top 5 in Germany. It is particularly strong in the area of condensed matter physics / material sciences and houses the Collaborative Research Center Spin+X and the Graduate School of Excellence Materials Science in Mainz. Very good candidates will be considered for this Graduate School that provides a structured graduate education with additional tailored training.

For enquiries and applications including a full CV contact Prof. Dr. M. Kläui (Email: klaeui@uni-mainz.de, Tel. +49-6131-3924345) and see www.klaeui-lab.de