

Physikalisches Kolloquium Universität Kiel Wintersemester 2013/2014

Dienstag, 4. Feb. 2014

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Exploring spintronics at the atomic scale

Magnetic materials play a central role in today's technology as demonstrated by their wide use in storage devices and sensors. The increasing miniaturization is rapidly leading to structures of nanometer size. At such scales, low-dimensionality effects can become crucial and dramatically modify the magnetic properties of materials, which can be completely different from those observed in bulk. Understanding such properties is of fundamental importance and is the first step towards their control. Due to their predictive power, first-principles calculations based on density-functional theory are a driving force in this field since its very beginning.

In this seminar I will show, by means of first-principles calculations, some recent advances in nanomagnetism that demonstrate that the magnetic phase space at surfaces can be much richer than previously expected and includes complex magnetic structures such as spin cycloids, conical spirals, and even Skyrmions. Due to spin-orbit coupling, chiral spin structures can occur, opening attractive perspectives for future spintronic applications. Such magnetic configurations can also be utilized to quasi-continuously orient the magnetic moment of adsorbates such as atoms or molecules, providing a mean to explore the concepts of spintronics, e.g. the spin valve effect, at the single-atom limit. Experimentally, these effects have been resolved by scanning tunneling microscopy.

Der Vortrag findet um **17:00 Uhr** im Hans-Geiger-Hörsaal (LS13-R.52) des Physikzentrums statt.
Ab **16:45 Uhr** werden **Kaffee** und **Tee** angeboten.

Bitte Becher mitbringen!

B. Heber
für die Dozenten der Physik

Gastgeber: Prof. Dr. Stefan Heinze, ITAP