chemisch physikalische gesellschaft

Gegründet im Jahre 1869 von H. Hlasiwetz, J. Loschmidt, J. Petzval und J. Stefan

EINLADUNG

zum Vortrag von

Prof. Dr. Rafal E. Dunin-Borkowski

Director, Institute for Microstructure Research and Director, Ernst Ruska-Centre for Microscopy and Spectroscopy with Electrons, Peter Gruenberg Institute, Research Centre Juelich, Deutschland

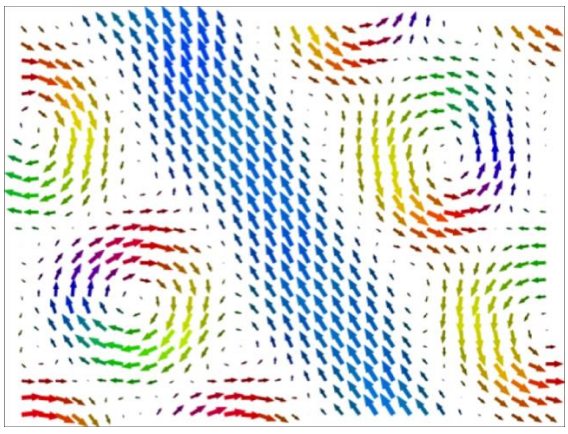
Direct measurement of magnetization distributions in nanoscale materials in the transmission electron microscope

am Dienstag, 20. März 2018, um 17:30 Uhr

Ort: Lise-Meitner-Hörsaal, Fakultät für Physik, Universität Wien,
1090 Wien, Strudlhofgasse 4 / Boltzmanngasse 5, 1. Stock

Barrierefreier Zugang: Boltzmanngasse 5, Lift, 1. Stock rechts über den Gang zum Hintereingang des Hörsaals

Abstract:
Transmission electron microscopy (TEM) has been revolutionised in recent years, both by the introduction of new hardware such as field-emission electron guns, aberration correctors and in situ stages and by the development of new techniques, algorithms and software that take advantage of increased computational speed and the ability to control and automate modern electron microscopes. In this talk, I will describe how the specialised TEM technique of electron holography, in combination with a model-based approach for the reconstruction of magnetization distributions from electron optical phase images, can be used to image the magnetic properties of materials with close-to-atomic spatial resolution, both in projection and in three dimensions. I will present results obtained from magnetic materials that are of interest for energy-efficient information technology, including nanoscale magnetic skyrmions in extended films and geometrically-confined structures fabricated using focused ion beam milling. I will conclude with a personal perspective on directions for the future development of transmission electron microscopy. Such developments may ultimately lead to approaches for characterising the positions, chemical identities and magnetic moments of individual atoms in three dimensions.



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