Sonderforschungsbereich 1277

Emergent Relativistic Effects in Condensed Matter -From Fundamental Aspects to Electronic Functionality

SFB – Colloquium

Speaker: Prof. Dr. Marcos H. D. Guimarães Zernike Institute for Advanced Materials, University of Groningen, The Netherlands

Tuesday, 26 July 2022, 14:15, H34 Date:

Topic: Two-Dimensional Materials for Spintronic and Spin-Orbitronic Devices

Abstract:

The electric manipulation of magnetization is a promising route for applications in energy-efficient memory and data-processing devices. The large family of layered van der Waals materials gives us crystals with various electronic properties and crystallographic symmetries and have shown to be very promising for efficient charge-to-spin conversion and the generation of spin-orbit torques for magnetization manipulation.

Ferromagnet Interfacial Effects **Bulk** Effects 2D Material

In this talk I will give a brief overview of the field, and show how the crystal structure, and electronic and magnetic properties of 2D materials can be used to control the magnitude, direction, and symmetries of spin-orbit torques. I will present our results on 2D semiconductors, where we observe large interfacial torques and show how their crystal structure can be used to imprint a magnetic anisotropy on an adjacent ferromagnet. These results further our understanding on the spin-torque mechanisms in these systems which can be used for future spin-orbitronic devices.

Host: Prof. Dr. Jaroslav Fabian







