nanoX tenured scientist mobility

NANOSCALE SCIENCE AND ENGINEERING

Dongzhe Li

Position CR 2

NanoX affiliation CEMES Team MEM

Host laboratory Spintronics theory group
Institute of Theoretical Physics and Astrophysics - University of Kiel
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Dates of stay 2/04/2022 - 15/06/2022

Brief description of the host lab

The spintronics theory group (Kiel) explore novel materials for future applications in nano- and spinelectronic devices, quantum computation, or neuromorphic computing using powerful methods of theoretical solid state physics involving computations on large computer clusters and/or supercomputers.

Research project during the stay

Ab initio study of magnetic skyrmions in 2D magnets

Magnetic skyrmions are topologically protected chiral spin structures with particle-like properties, which are often induced by the Dzyaloshinskii−Moriya interaction (DMI). The recent discovery of truly two-dimensional (2D) magnetic materials opened up new opportunities for exploring magnetic skyrmions in atomically thin vdW materials. In this project, we will employ a combined noncollinear density functional theory and atomistic spin dynamics simulations to obtain optimal heterostuctures that offer great potential for hosting skyrmions in 2D magnets. In particular, we will provide a deeper understanding of the interplay between the DMI and higher-order exchange interactions (HOI) for the skyrmion stability in these systems.

If relevant, add a figure

Legend