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JOHANNES GUTENBERG UNIVERSITÄT MAINZ

Theory of Condensed Matter: Hard Condensed Matter

June 2, 2016 at 2 p.m.
Medienraum

Mikhail Titov
Radboud University, Nijmegen

Spin-orbit and spin-tranfer torques in two dimensions

Spin-orbit and spin-transfer torques are competing forces that drive magnetic domains in the heavy-metal/ferromagnet bi-layers. In this talk I present a microscopic theory of both effects that is naturally obtained from generalised Kubo formalism. In this formalism the torques are naturally related to the spin-susceptibility tensors that can be evaluated microscopically for a given model. Interestingly the formulation completely avoids the notion of the spin current. I discuss the torques arising in the effective 2D Bychkov-Rashba model and speculate on various generalisations of the results obtained.

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