POZVÁNKA

na seminář oddělení 15 Fyzikálního ústavu AV ČR, v.v.i.

Seminář se koná

ve středu 25. května 2016 v 11:30

v zasedací místnosti budovy A (vedle knihovny) Fyzikálního ústavu, Cukrovarnická 10, Praha 6.

Na programu je přednáška o článku Nat. Mat. 15, 535, (2016) ze série Journal Club

Magnetization switching by spin–orbit torque in an antiferromagnet–ferromagnet bilayer system

kterou prosloví

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Abstrakt

Current–induced effects in layered polycrystalline metallic systems attracted significant attention after it had been shown that the magnetization of a ferromagnetic layer can be reversed by applying electric current [1, 2]. The mechanisms behind the magnetization switching are actively studied, usually two contributions are discussed: inverse spin galvanic effects on the interface of ferromagnet (FM) and heavy nonmagnetic metal (NM) and spin current generated via Spin Hall Effect (SHE) in NM which is injected to the adjacent FM layer.

In the recent work of Fukami et al. [3] the NM layer is replaced by an antiferromagnetic (AFM) metal MnPt. The authors show that SHE in MnPt can generate a torque on the FM layer. Moreover, they exploit the exchange coupling effect on the AFM/FM interface to replace the external magnetic field which was used to orient the FM layer in previous experiments [1, 2]. Finally, the authors observe a gradual change of Hall resistance R_H as a function of applied current density (in contrast to a "binary switch" of R_H in structures FM/NM). Such behavior has a potential to serve as a memristor element [4] in a spintronic device. Our planned measurements related to the work of Fukami et al. [3] (on IrMn and MnPt samples) will also be discussed.

[1] I.M. Miron et al., Nat. Mat. 9, 230 (2010).
[2] L. Liu et al., Science 336, 555 (2012).
[3] S. Fukami et al., Nat. Mat. 15, 535 (2016).
[4] N.D. Matur, Nature 455, E13 (2008).
