

PHYSIKALISCHES KOLLOQUIUM

Mittwoch, 19.12.2012, um 17:15 Uhr

Ort: Reichenhainer Str. 90; Neues Hörsaalgebäude, Raum: 2/N013

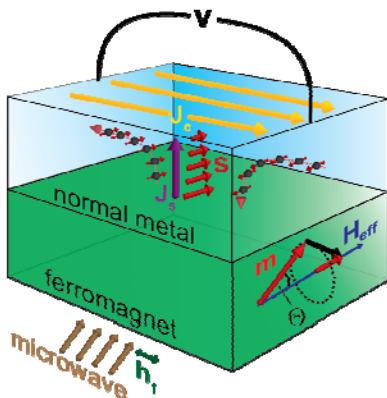


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Spin current-based experiments in ferromagnet/normal metal hybrids

A pure spin current – i.e., the directed flow of spin angular momentum – is a fascinating manifestation of spin physics in the solid state. In ferromagnet/normal metal hybrid bilayers, pure spin currents can be generated, e.g., by means of spin pumping [1], or via the application of thermal gradients in the so-called spin Seebeck effect [2]. An elegant scheme for detecting spin currents relies on the inverse spin Hall effect: because of spin-orbit coupling, a spin current also induces a charge current, which then can be detected using conventional electronics [1,2].



In the talk, I will introduce and compare our recent experimental investigations of spin current-related phenomena in ferromagnet/normal metal hybrid devices [3-6]. Our results show that spin current generation is possible from both electrically conductive as well as electrically insulating ferromagnets (so-called magnetic insulators), with comparable efficiency. Last but not least, I will also address a novel magneto-resistance effect arising from the interplay between spin and charge currents in ferromagnetic insulator/normal metal hybrids.

References

- [1] O. Mosendz et al., *Phys. Rev. Lett.* **104**, 046601 (2010).
- [2] K. Uchida et al., *Nature* **455**, 778 (2008).
- [3] F. D. Czeschka et al., *Phys. Rev. Lett.* **107**, 046601 (2011).
- [4] M. Weiler et al., *Phys. Rev. Lett.* **108**, 176601 (2012).
- [5] M. Weiler et al., *Phys. Rev. Lett.* **108**, 106602 (2012).
- [6] H. Nakayama et al., *arXiv* 1211.0098 (2012)

Alle Zuhörer sind ab 17:00 Uhr zum Kaffee vor dem Hörsaal eingeladen.