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Towards thermally induced spin accumulation in Fe/GaAs structures[1] THOMAS WAGNER, Department of Materials Science and Metallurgy, University of Cambridge, Cambridge, UK, KAMIL OLEJNIK, Institute of Physics ASCR, Praha, Czech Republic, JAMES HAIGH, Hitachi Cambridge Laboratory, Cambridge, UK , ANDREW IRVINE, Cavendish Laboratory, University of Cambridge, Cambridge, UK, SYLVAIN MARTIN, Hitachi Cambridge Laboratory, Cambridge, UK , RICHARD CAMPION, School of Physics and Astronomy, University of Nottingham, Nottingham, UK , JOERG WUNDERLICH, Hitachi Cambridge Laboratory, Cambridge, UK — We study non-local spin valves of semiconductor-ferromagnetic metal hybrid systems [1]. The epitaxially grown samples consist of a low doped GaAs transport channel with ultrathin Fe top contacts. Magnetic fields applied along the easy and hard axis show spin-valve and Hanle-type curves, respectively. The latter can be used to determine the spin-dephasing time in our samples [2]. We further investigate the potential of non-local spin valves for electrical detection of thermally induced spin accumulation in semiconductors. Thermal spin injection is driven by temperature gradients across interfaces between ferromagnetic and non-magnetic materials [3]. Common ways to establish the required temperature gradients are Joule heating and absorption of focused laser light. We present finite-element simulations of the temperature profile expected in our microdevices. This is of interest in the emerging field of spin caloritronics.
[1] X. Lou *et al.*, Nat. Phys. 3, 197-202 (2007)
[2] K. Olejník, *et al.*, Phys. Rev. Lett. 109, 076601 (2012)
[3] A. Slachter, *et al.*, Nat. Phys. 6, 879-882 (2010)

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