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Spin filtering of hot electrons in ferromagnetic layers DRISS LAMINE, Laboratoire de Physique de la matière condensée, UMR 7643-CNRS, Ecole Polytechnique. 91128 Palaiseau Cedex, France, NICOLAS ROUGEMAILLE, Lawrence Berkeley National Laboratory, 1 Cyclotron Road MS/72, Berkeley, CA 94720, USA, GEORGES LAMPEL, YVES LASSAILLY, JACQUES PERETTI, Laboratoire de Physique de la matière condensée, UMR 7643-CNRS, Ecole Polytechnique. 91128 Palaiseau Cedex, France — We present a spin dependent transport experiment where spin polarized electrons, injected from vacuum, are spin-filtered when entering into a thin ferromagnetic layer. The role of the interface between this spin-filter layer and the "current collector" is analysed. In a first geometry, the "current collector" is a semiconductor and the transmitted current is measured through a Fe/Oxide/GaAs diode. In that case, the measured electrons are selected at the interface, at an energy higher than the Schottky barrier. In a second geometry, the spin filter is a self standing thin layer Au/Co/Au and the "current collector" is a faraday cup. In that case, only electrons that overcome the vacuum energy level of the gold are measured. In both cases, the spin dependent part of the collected current is measured when the ferromagnetic layer is reversed. We have found an energy domain where both the collected current and its spin dependence increase over orders of magnitude. The role of the interface in the spin-dependent transport is discussed and a spin dependent transport model is presented.

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