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Temperature dependent asymmetry of the nonlocal spin injection resistance: evidence for spin non-conserving interface scattering SAMIR GARZON, University of Maryland at College Park, IGOR ZUTIC, Naval Research Laboratory, RICHARD WEBB, University of South Carolina / USC Nanocenter — We report nonlocal spin injection and detection experiments on mesoscopic Co-Al_2O_3-Cu spin valves. Spin precession in transverse fields (Hanle effect), as well as dependence of the nonlocal resistance on injector-detector magnetization alignment, have been studied. The spin diffusion length and the current spin polarization in Cu can be extracted from the measurements. We have also observed a temperature dependent asymmetry in the nonlocal resistance between parallel and antiparallel configurations of the magnetization of injector and detector. This suggests the existence of a nonequilibrium resistance that depends on the relative orientation of the detector magnetization and the nonequilibrium magnetization in the normal metal, providing evidence for increasing interface spin scattering with temperature.

Samir Garzon
University of Maryland at College Park

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