

Abstract Submitted
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Temperature dependence of spin polarization in a lateral Fe/GaAs spin injection device G. SALIS, S.F. ALVARADO, A. FUHRER, L. GROSS, R. SCHLITTLER, IBM research - Zurich, Säeumerstrasse 4, 8803 Rüeschlikon, Switzerland — The size of electrically-detected electron spin polarization in a non-local Fe/GaAs lateral spin device is studied as a function of temperature and injection bias. The non-local spin signal decays approximately exponentially with temperature, and remains observable up to room temperature. With Hanle measurements in a perpendicular magnetic field, the diffusion constant and the spin lifetime are determined. These parameters characterize the diffusive spin transport in the GaAs channel. It is found that the decrease of the signal with temperature is mainly attributed to the strongly increasing spin-decay rate in GaAs, whereas a temperature-dependence of the spin-injection efficiency is less pronounced. Differences for spin injection and spin filtering are discussed.

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