

Abstract Submitted
for the MAR15 Meeting of
The American Physical Society

Spin accumulation in out of equilibrium mesoscopic superconductors DENIS CHEVALLIER, Univ of Leiden, CLEMENT DUTREIX, Univ Paris-Sud 11, MARINE GUIGOU, IPHT Saclay, CHARIS QUAY, MARCO APRILI, Univ Paris-Sud 11, CRISTINA BENA, IPHT Saclay — We study the spin accumulation in a junction between a superconductor and a ferromagnet or a normal metal in presence of a Zeeman magnetic field applied to the superconductor, and when the junction is taken out of equilibrium by applying a voltage bias. We first apply a DC voltage on the junction and show that the spin relaxation time (ns) is larger than the charge relaxation time (\sim ps) inducing a spin-charge separation in the superconductor. Then we calculate the time-dependence of the spin accumulation for an applied AC voltage. We find that the measured spin accumulation depends on the frequency of the applied bias. This dependence allows one to extract directly the spin relaxation time in the superconductor which is in complete agreement with the experimental result.

Denis Chevallier
Univ of Leiden

Date submitted: 07 Nov 2014

Electronic form version 1.4