Abstract Submitted
for the MAR10 Meeting of
The American Physical Society

Crossed Andreev reflection and electron transfer in three-terminal devices HAVARD HAUGEN, DANIEL HuERTAS-HERNANDO, ARNE BRATAAS, Norwegian University of Science and Technology, N-7491 Trondheim, Norway, XAVIER WAINTAL, SPSMS-INAC-CEA, 17 rue des Martyrs, 38054 Grenoble CEDEX 9, France — Using scattering theory we investigate the transport properties of three-terminal devices where one terminal is superconducting and two are normal metals. The contributions from electron transfer (ET) and crossed Andreev reflection (CAR) to the non-local signal between the two normal terminals are identified. We compute ET and CAR numerically for asymmetric devices. For symmetric devices, analytical expressions for ET and CAR are also found. ET dominates CAR in symmetric devices, but CAR can dominate ET in asymmetric devices if ET is sufficiently suppressed.

Håvard Haugen
Norwegian University of Science and Technology (NTNU)

Date submitted: 08 Dec 2009

Electronic form version 1.4