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Crossed Andreev reflection and electron transfer in three-terminal devices HÅVARD HAUGEN, DANIEL HUERTAS-HERNANDO, ARNE BRATAAS, Norwegian University of Science and Technology, N-7491 Trondheim, Norway, XAVIER WAIN TAL, 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.

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