Abstract Submitted
for the MAR16 Meeting of
The American Physical Society

Enhanced crossed Andreev reflection in a superconducting ladder[1] ABHIRAM SOORI, International Centre for Theoretical Sciences, TIFR, Bengaluru, SUBROTO MUKERJEE, Indian Institute of Science, Bangalore — Andreev reflection is a process that happens at the junction of a normal metal (NM) and a superconductor(SC), where the Cooper-pair current in the superconductor gets equal contributions from the electron and hole channels of the normal metal. Crossed Andreev reflection (cAr) is a related process that happens in a system of two NM's independently connected to a SC when the current in the electron channel of the first NM and the current in the hole channel of the second NM together contribute to the Cooper-pair current in the SC. A typical experimental set-up to investigate cAr consists of two ferromagnetic metal leads connected to an s-wave superconductor. We propose an alternative mesoscopic set-up that enhances cAR which contains no ferromagnetic parts. Instead, our set-up consists of two NM's coupled to a superconducting ladder. We calculate the currents in the different channels and demonstrate enhanced cAr.

[1]AS thanks ICTS-TIFR, Bengaluru for the financial support.

Abhiram Soori
International Centre for Theoretical Sciences, TIFR, Bengaluru

Date submitted: 01 Nov 2015 Electronic form version 1.4