

Abstract Submitted
for the 4CF12 Meeting of
The American Physical Society

Macroscopic coherent rectification in Andreev interferometers¹
JONATHAN MEAIR, PHILIPPE JACQUOD, Physics Department, University of Arizona — We investigate nonlinear transport through quantum coherent metallic conductors contacted to superconducting components. We find that in certain geometries, the presence of superconductivity generates a large, finite-average rectification effect. Specializing to Andreev interferometers, we show that the direction and magnitude of rectification can be controlled by a magnetic flux tuning the superconducting phase difference at two contacts. The rectification current is macroscopic in that it scales with the linear conductance, and we find that it exceeds 5% of the linear current at sub-gap biases of few tens of μeV 's.

¹Supported by NSF grants DMR-0706319 and PHY-1001017.

Jonathan Meair
Physics Department, University of Arizona

Date submitted: 27 Sep 2012

Electronic form version 1.4