

Abstract Submitted  
for the MAR06 Meeting of  
The American Physical Society

**Elastic Cotunnelling and Crossed Andreev Reflection in Normal-Superconductor Nanostructures**<sup>1</sup> PAUL CADDEN-ZIMANSKY, ZHIGANG JIANG, VENKAT CHANDRASEKHAR, Department of Physics and Astronomy, Northwestern University — Transport experiments were made on normal-superconductor-normal systems where the separation of the normal elements is less than a superconducting coherence length. For this geometry two coherent, nonlocal effects have been predicted. In elastic cotunnelling electrons from one normal element can tunnel to the other through a virtual state in the superconducting gap. In crossed Andreev reflection one electron from each spatially separated normal element join to enter the superconductor as a Cooper pair. We present evidence of these nonlocal effects and show that their spatial dependence agrees with theory.

<sup>1</sup>Supported by NSF-DMR-0201530.

Paul Cadden-Zimansky  
Department of Physics and Astronomy, Northwestern University

Date submitted: 29 Nov 2005

Electronic form version 1.4