

Abstract Submitted
for the MAR12 Meeting of
The American Physical Society

Progress towards measuring electron-electron interactions in persistent currents MANUEL A. CASTELLANOS-BELTRAN, DUSTIN Q. NGO, Department of Physics, Yale University, JACK G.E. HARRIS, Department of Physics and Department of Applied Physics, Yale University — The equilibrium persistent current (PC) in normal metal rings have been a challenge for both experimentalists and theorists. Specifically, the magnitude of the average PC's in normal metals has been a long-standing puzzle. Previous measurements of the average current ($\langle I_{h/2e} \rangle$) were larger than theoretical predictions and indicated a diamagnetic sign. A possible explanation for these results is that they arise from the interplay of attractive electron-electron interactions within the metal (leading to the enhanced average PC) and trace magnetic impurities (which suppress the BCS superconductivity that would otherwise result from the attractive interactions). In this talk, I will discuss our progress towards measurements that intend to clarify the role that electron-electron interactions and magnetic impurities play in the persistent current.

Manuel A. Castellanos-Beltran
Yale University

Date submitted: 14 Nov 2011

Electronic form version 1.4