

Abstract Submitted
for the MAR07 Meeting of
The American Physical Society

Casimir force measurements between metal and high- T_c superconductor surfaces MARK B. ROMANOWSKY, JEREMY N. MUNDAY, RICHARD SCHALEK, FEDERICO CAPASSO, Harvard University, QIANG LI, GENDA GU, Brookhaven National Laboratory — It is well known that the strength of the Casimir force between two objects is controlled by the dielectric properties (or optical conductivity) of the objects. Nearly all precision measurements of Casimir forces to date are between two metals. Here we report measurements of the Casimir force between a metal-coated sphere and a plate made of the high- T_c cuprate superconductor BSCCO-2212, using an atomic force microscope at room temperature. BSCCO has dielectric properties substantially different from metals and indeed most materials, displaying extreme anisotropy in dc and optical conductivity, as well as a “strange metal” normal state. The force between metal and BSCCO is compared to the force measured between two metals.

Mark B. Romanowsky
Harvard University

Date submitted: 29 Nov 2006

Electronic form version 1.4