Abstract Submitted
for the MAR07 Meeting of
The American Physical Society

Size quantization effect in graphite based proximity systems ANDREAS BILL, California State University Long Beach, 1250 Bellflower Blvd., Long Beach, CA 90840, VLADIMIR Z. KRESIN, Lawrence Berkeley National Laboratory, University of California at Berkeley, Berkeley, CA 90720 — We discuss size-quantization (SQ) effects in a proximity system made of a graphite thin film deposited onto a superconductor. We show that SQ leads to oscillations of the superconducting critical temperature T_c as a function of the thickness of the graphite layer. This oscillation is due to the peculiar behavior of the density of state in size-quantized systems. The calculated period is directly related to major parameters of the semimetal and thus to the normal state properties of the bilayer. Recent experiments made on graphite/superconductor bilayers are discussed in the framework of the theory.

Andreas Bill
California State University Long Beach, 1250 Bellflower Blvd., Long Beach, CA 90840

Date submitted: 20 Nov 2006 Electronic form version 1.4