

Abstract Submitted  
for the MAR15 Meeting of  
The American Physical Society

**Low-temperature STM Measurements of Granular Pb films<sup>1</sup>** S.A. MOORE, J. FEDOR, Department of Physics, Temple University, Philadelphia, PA 19122, J. CURTIS, G. KARAPETROV, Department of Physics, Drexel University, Philadelphia, PA 19104, I. BELOBORODOV, Department of Physics, California State University Northridge, Northridge, CA 91330, M. IAVARONE, Department of Physics, Temple University, Philadelphia, PA 19122 — Using low-temperature scanning tunneling microscopy and spectroscopy (LT-STM/STS) we have investigated the electronic properties of granular Pb films grown on HOPG at low temperature. Films grown under these conditions form a two-dimensional array of disconnected grains with a similar distribution of sizes. Local spectroscopy measurements as a function of field and temperature reveal a grain size dependent competition between the repulsive electron-electron interaction and the attractive superconducting pairing interaction. Our results show the presence of an increased depletion of states around the Fermi energy for all grain sizes, with a complete suppression of the superconducting state below a critical grain size. We compare these results to those found on 9ML and 100ML continuous films also grown on HOPG, where the superconducting state completely dominates the electronic properties.

<sup>1</sup>Work at Temple University was supported by the U.S. Department of Energy, Office of Basic Energy Sciences, Division of Materials Sciences and Engineering under Award DE-SC0004556.

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Date submitted: 28 Oct 2014

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