Abstract Submitted
for the MAR05 Meeting of
The American Physical Society

Vortices and the superconductor-insulator transition D. SHAHAR, G. SAMBANDAMURTHY, A. JOHANSSON, E. PELED, Department of Condensed Matter Physics, Weizmann Institute of Science, Rehovot 76100, Israel, P.G. BJORNSSON, K.A. MOLER, Department of Applied Physics, Stanford University, Stanford, CA 94305 — We present results from a study of the temperature (T) and magnetic field (B) dependence of disordered, superconducting, amorphous indium-oxide thin-films. Application of a perpendicular B weakens superconductivity until, at a well- defined critical B, the system is driven into an insulating state. We find that our samples follow a simple power-law dependence on B that holds over a wide range of T and resistance. Surprisingly, this power-law dependence continues, uninterrupted, into the B-driven insulating state. These results indicate that vortices play a central role in determining the transport properties of our films.

Sambandamurthy Ganapathy
Department of Condensed Matter Physics,
Weizmann Institute of Science,
Rehovot 76100, Israel

Date submitted: 08 Dec 2004 Electronic form version 1.4