## Abstract Submitted for the MAR07 Meeting of The American Physical Society

Disordered superconducting films in strong magnetic fields YONATAN DUBI, Physics Department, Ben-Gurion University, Beer Sheva 84105, Israel, YIGAL MEIR, YSHAI AVISHAI, Physics Department and the Ilse Katz Center for Meso- and Nano-scale Science and, Ben-Gurion University, Beer Sheva 84105, Israel — Experimental studies of magneto-resistance in disordered superconducting thin films reveal an abundance of unexpected results, such as a huge peak in the magneto-resistance on the insulating side of the superconductor-insulator transition which evolves as the field is tilted, and traces of superconducting correlations that survive well above the transition. Recently, a theory that accounts for these effects was suggested, in which it is postulated that (i) well-separated SC islands are formed in the disordered film, and (ii) their size and strength diminishes with magnetic field. In this work we present extensive numerical calculations which support these conjectures, by means of a locally self-consistent solution of the BdG equations in the presence of disorder and tilted magnetic field. Simple phenomenological arguments from percolation theory are then used to explain various experimental findings, such as the non-monotonic magneto-resistance in parallel field and the relation between the critical field and the magnetic field tilt angle.

> Yonatan Dubi Physics Department, Ben-Gurion University, Beer Sheva 84105, Israel

Date submitted: 16 Nov 2006

Electronic form version 1.4