

Abstract Submitted
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Random-Field Model of a Cooper Pair Insulator THOMAS PROCTOR, The Graduate Center, CUNY, EUGENE CHUDNOVSKY, DMITRY GARANIN, CUNY Lehman College — The model of a disordered superconducting film with quantum phase fluctuations is mapped on a random-field XY spin model in 2+1 dimensions. Analytical studies within continuum field theory, supported by our recent numerical calculations on discrete lattices, show the onset of the low-temperature Cooper pair insulator phase. The constant external field in the random-field spin model maps on the Josephson coupling between the disordered film and a bulk superconductor. Such a coupling, if sufficiently strong, restores superconductivity in the film. This provides an experimental test for the quantum fluctuation model of a superinsulator.

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