

Abstract Submitted
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The approach to a superconductor-to-Bose-insulator transition in disordered films NICHOLAS P. BREZNAY, M. A. STEINER, A. KAPITULNIK, Stanford University — We study the superconductor-insulator transition in the limit of strongly disordered films of indium oxide. It was observed previously that the insulating phase is strengthened as the disorder increases, creating a strong barrier to pair-breaking in the vicinity of the critical point. We find that for the strongest insulators, the critical resistance is approximately the universal resistance for pairs, $RQ = h/4e^2$ and the scaling of both the linear and non-linear resistance is consistent with the quantum percolation solution to the dirty boson model. We combine these results with previous data and note separate branches corresponding to strong and weak disorder. The strong disorder branch suggests a true dirty boson superconductor-insulator transition.

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