Abstract Submitted
for the MAR17 Meeting of
The American Physical Society

Microwave Spectroscopic Investigation of the Superconductor Insulator Transition in a Strongly Disordered Superconductor[1] YOUCHENG WANG, Department of Physics and Astronomy, Institute for Quantum Matter, Johns Hopkins University , IDAN TAMIR , DAN SHAHAR , Department of Condensed Matter Physics, Weizmann Institute of Science, N. P. ARMITAGE , Department of Physics and Astronomy, Institute for Quantum Matter, Johns Hopkins University — Superconductor insulator transitions (SIT) driven by disorder or perpendicular magnetic field in 2D disordered superconductor thin films is a protypical example of a quantum phase transition. There can be a field-tuned transition, as $T \to 0$, from vortex glass (superconductor) to Cooper pair glass (insulator) wherein vortices Bose condense and delocalize. Here we measure the complex dynamical response within a broadband of frequencies ($50MHz - \sim 10GHz$) of a strongly disordered InO_x thin film across its SIT using Corbino microwave spectroscopy. We report the frequency dependence of complex conductance and the critical behavior of superfluid density and fluctuation rate, along with the temperature and field dependence of DC sheet resistance.

[1]The research at JHU was supported by NSF DMR-1508645

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Date submitted: 07 Nov 2016 Electronic form version 1.4