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Broadband microwave study of 2D superconductor-insulator quantum phase transition WEI LIU, LIDONG PAN, Johns Hopkins University, MINSOO KIM, SAMBANDAMURTHY GANAPATHY, SUNY-Buffalo, PETER ARMITAGE, Johns Hopkins University — Using our broadband microwave spectrometer, we investigate the complex AC conductance of disordered InO_x films as a function of magnetic field through the 2D superconductor-insulator quantum phase transition. We have studied the behaviors of the frequency dependent complex response function of a particular InO_x sample near the critical point in the limit of $\hbar\omega < K_B T$ and $\hbar\omega > K_B T$ and compare our results to theoretical models. We discuss the possibility for a novel insulating state on the insulating side of the transition through the frequency dependent conductance.

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