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A scaling analysis of the superconducting fluctuations in 2D InOx thin films WEI LIU, Johns Hopkins University, MINSOO KIM, TAI-LUNG WU, SAMBANDAMURTHY GANAPATHY, SUNY-Buffalo, PETER ARMITAGE, Johns Hopkins University — We apply a broadband microwave Corbino spectrometer covering the range from 10MHz to 20GHz to the study of 2D disordered superconducting InOx thin films. Explicit frequency dependency of the superfluid stiffness and conductivity are obtained down to 300mK. Via vacuum annealing, we investigate a broad range of disorder levels and transition temperatures in a single film. We perform a scaling analysis in which we can extract characteristic relaxation time of superconducting fluctuations. We discuss our results in terms of prevailing scenarios for fluctuation superconductivity and make connection to other experimental results.

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