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A dynamical study of phase fluctuations and their critical slowing down in amorphous superconducting films[1] WEI LIU, Johns Hopkins University, MINSOO KIM, GANAPATHY SAMBANDAMURTHY , University at Buffalo-SUNY, PETER ARMITAGE, Johns Hopkins University — We report a comprehensive study of the complex AC conductance of amorphous superconducting InO_x thin films. Using a novel broadband microwave "Corbino" spectrometer we measure the explicit frequency dependency of the complex conductance and the phase stiffness over a range from 0.21 GHz to 15 GHz at temperatures down to 350 mK. Dynamic AC measurements are sensitive to the temporal correlations of the superconducting order parameter in the fluctuation range above T_c. Among other aspects, we explicitly demonstrate the critical slowing down of the characteristic fluctuation rate on the approach to the superconducting state and show that its behavior is consistent with vortex-like phase fluctuations and a phase ordering scenario of the transition.

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