

Abstract Submitted
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Superconducting fluctuation regime in $\text{HgBa}_2\text{CuO}_{4+\delta}$ revealed by microwave measurements NEVEN BARISIC, University of Minnesota, USA, MIHAEL GRBIC, ANTONIJE DULCIC, University of Zagreb, Croatia, YUAN LI, Stanford University, USA, XUDONG ZHAO¹, Jilin University, PR China, GUICHUAN YU, MARTIN GREVEN, University of Minnesota, USA, MIROSLAV POZEK, University of Zagreb, Croatia — There have been many attempts to measure the fluctuations preceding the superconducting long-range order in the cuprates with various experimental techniques, yet the onset temperature of the fluctuation regime has proven difficult to determine. We used a novel approach to microwave conductivity measurements in order to elucidate the phase diagram of the cuprates. Initial measurements were performed on the single-layer material $\text{HgBa}_2\text{CuO}_{4+\delta}$. From c-axis data for a sample close to optimal doping, we clearly discern the opening of the pseudogap at $T^*=185$ K, the appearance of the superconducting fluctuations at the much lower temperature $T'=105$ K, and the transition to the superconducting state at $T_c=94.3$ K. Our result implies that the superconducting fluctuations extend only to about 10 K above T_c . Using the same approach, a narrow fluctuation regime is also found in other cuprates.

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