

Abstract Submitted
for the MAR12 Meeting of
The American Physical Society

Coexistence of superconducting gap and pseudogap above and below T_c in cuprates JEFFERY TALLON, JAMES STOREY, MacDiarmid Institute, Industrial Research, JOHN LORAM, Cavendish Lab., Cambridge University — We develop a new method to calculate the full T -dependent superconducting (SC) gap from thermodynamic measurements and apply to the cuprates. We find that the SC gap persists high above T_c due to strong SC fluctuations and coexists there with the pseudogap. This allows the (disputed) phase diagram to be mapped more accurately than previously. We apply the results below T_c to understand the doping and temperature evolution of critical currents in practical conductors.

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Date submitted: 10 Nov 2011

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