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A Revision of the Phase Diagram of Overdoped BSCCO¹

HONGBO YANG, Brookhaven National Laboratory/Stony Brook University, GENDA GU, PETER JOHNSON, Brookhaven National Laboratory, HELMUT CLAUS, DAVID HINKS, Argonne National Laboratory — A re-examination of the temperature dependence of the anti-nodal gap observed in the overdoped region of the phase diagram BSCCO by angle-resolved photoemission spectroscopy (ARPES) suggests that the transition temperature, at which the gap, closes was under-estimated previously. In this study both oxygen and calcium doping were used as a means of achieving overdoping with both methods yielding similar results. Higher experimental resolution and new ways of data analysis improve the accuracy of extracting superconducting gap value. The present studies result in a modification to the accepted phase diagram.

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