

Abstract Submitted
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Competing charge, spin, and superconducting orders in underdoped YBCO¹ M. HUECKER, Brookhaven National Laboratory, E. BLACKBURN, University of Birmingham, D.A. BONN, University of British Columbia, J. CHANG, Ecole Polytechnique Federale de Lausanne (EPFL), N.B. CHRISTENSEN, Technical University of Denmark, E.M. FORGAN, University of Birmingham, O. GUTOWSKI, Deutsches Elektronen-Synchrotron DESY, W.N. HARDY, University of British Columbia, S.M. HAYDEN, University of Bristol, A.T. HOLMES, University of Birmingham, R. LIANG, University of British Columbia, D.S. ROBINSON, Advanced Photon Source (APS), U. RUETT, M. V. ZIMMERMANN, Deutsches Elektronen-Synchrotron DESY — High energy X-ray diffraction experiments on $\text{YBa}_2\text{Cu}_3\text{O}_y$ were performed to explore the doping evolution of the recently discovered charge density wave (CDW) phase. The results show that the CDW phase exists at least for charge carrier concentrations of $0.078 < p < 0.132$. Hence, the lower bound is located in vicinity of the quantum critical point to spin density wave order. For all dopings CDW order sets in in the normal state, but is partially suppressed upon cooling below T_c . This clearly suggests a competition between the two states. The incommensurability of the CDW order decreases approximately linear with the hole concentration, which is in contrast to the increase observed for stripe order in La-based cuprates. A detailed comparison with the charge stripe order in $\text{La}_{2-x}\text{Ba}_x\text{CuO}_4$ is presented.

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Markus Huecker
Brookhaven National Laboratory

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