

Abstract Submitted
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Phase Separation and Magnetism in High Temperature Superconductors¹ SAMUEL EMERY, BARRET WELLS, JOSEPH BUDNICK, WILLIAM HINES, University of Connecticut, LINDA UDBY, NIELS HESSEL ANDERSON, Risoe National Laboratory, KIM LEFMANN, University of Copenhagen, CHRISTOF NIEDERMAYER, Paul Scherrer Institute / ETH Zurich, FANGCHENG CHOU, National Taiwan University — Previous work by our group has determined that the low temperature phase diagram of super-oxygenated, La₂CuO₄ consists of only a few line phases that are either superconducting (SC) or magnetic. Samples with doping levels between the stable phases will segregate into separate domains; this raises the question as to the nature of the interaction between SC and magnetic domains. The application of a magnetic field has been shown to enhance the magnetic scattering associated with a spin density wave order parameter. In our phase separated samples, the magnitude of this enhancement varies strongly with no apparent dependence on hole concentration or phase fractions. Disorder in cuprate superconductors also seems to favor magnetic order over superconducting order, and may be responsible for the variations we find. We present muon and neutron results of the enhancement of magnetic order by magnetic field and oxygen disordering in superoxygenated La_{2-x}CuO_{4+y}.

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