Abstract Submitted
for the MAR10 Meeting of
The American Physical Society

Detection of magnetism in heavily overdoped $La_{2-x}Sr_xCuO_4$ single crystals CHRISTINA KAISER, VIGHEN PACRADOUNI, Simon Fraser University, SEYED-AHMAD SABOK-SAYER, Northern Illinois University, CHRIS COCHRANE, Queen's University, DOUG MACLAUGHLIN, University of California, Riverside, SEIKI KOMIYA, Central Research Institute of Electric Power Industry, NIGEL HUSSEY, University of Bristol, JEFF SONIER — We have measured the DC magnetic susceptibility of a heavily overdoped $La_{1.67}Sr_{0.33}CuO_4$ single crystal. In contrast to lower-doped superconducting samples no magnetic anisotropy is observed. However, as previously seen in the normal state, there is a Curie-like term that appears in the susceptibility for strontium content in excess of x$\sim$0.19. This is true even for $La_{1.67}Sr_{0.33}CuO_4$, in which the electronic system is fairly well established to be a Fermi liquid. A tentative explanation of the DC magnetic susceptibility and complimentary MuSR measurements on the same $La_{1.67}Sr_{0.33}CuO_4$ sample is discussed in terms of recent predictions of ferromagnetism in the heavily overdoped regime.

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Date submitted: 22 Dec 2009 Electronic form version 1.4