

Abstract Submitted
for the MAR09 Meeting of
The American Physical Society

Thermopower across the pseudogap critical point of La(1.6-x)Nd(0.4)Sr(x)CuO(4): Evidence for a quantum critical point in a hole-doped high-Tc superconductor OLIVIER CYR-CHOINIERE, RAMZY DAOU, FRANCIS LALIBERTÉ, DAVID LEOEUF, NICOLAS DOIRON-LEYRAUD, Universite de Sherbrooke, JIAQIANG YAN, JIANSI ZHOU, JOHN B. GOODENOUGH, Texas Material Institute, U of Texas at Austin, LOUIS TAILLEFER, Universite de Sherbrooke — The thermopower S of the high-Tc superconductor La(1.6-x)Nd(0.4)Sr(x)CuO(4) was measured as a function of temperature T near its pseudogap critical point, the critical hole doping p^* where the pseudogap temperature T^* goes to zero. Just above p^* , S/T varies as $\ln(1/T)$ over a decade of temperature. Below p^* , S/T undergoes a large increase below T^* . As with the temperature dependence of the resistivity, which is linear just above p^* and undergoes a large upturn below T^* , these are typical signatures of a quantum phase transition. This suggests that p^* is a quantum critical point below which some order sets in, causing a reconstruction of the Fermi surface, whose fluctuations are presumably responsible for the linear-T resistivity and logarithmic thermopower. We discuss the possibility that this order is the “stripe” order known to exist in this material.

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Date submitted: 01 Dec 2008

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