Abstract Submitted
for the MAR06 Meeting of
The American Physical Society

Low Temperature Normal State Specific Heat properties of $La_{2-x}Sr_xCuO_4$ using High Magnetic Fields SCOTT RIGGS, GREG BOEBINGER, JON BETTS, FEDOR BALAKIREV, ALBERT MIGLORI, MARCELO JAIME, Florida State University — A number of models for high Tc cuprates suggest that the anomalous electronic properties of HTS are governed by the existence of a quantum critical point (QCP). According to this scenario, the superconductivity arises from the competition between two states and the resulting fluctuation-mediated pairing. In heavy fermions, non-Fermi liquid behavior has often been observed near a QCP: eg near-linear power-law resistivity and a divergence in the Sommerfeld coefficient in the zero temperature limit. By using extremely high magnetic fields we suppress superconductivity and reveal the normal state in the zero temperature limit. The specific heat is measured using the relaxation technique on several different dopings of LSCO. The electronic specific heat is isolated by subtracting the phonon specific heat measured on LCO, the parent insulating compound. One overdoped single crystal studied (LSCO with a nominal Srx=0.22) was cut from the same crystal that displays a linear electrical resistivity between room temperature and ∼5K, when the superconductivity is suppressed with a 45T magnetic field applied along the *c*-axis.

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Date submitted: 03 Dec 2005 Electronic form version 1.4