Abstract Submitted
for the MAR08 Meeting of
The American Physical Society

Magnetotransport and noise in lightly doped $\mathbf{La_{2-x}Sr_xCuO_4}$ and $\mathbf{La_2Cu_{1-x}Li_xO_4}$ IVANA RAIČEVIĆ, Dept. of Physics and National High Magnetic Field Laboratory (NHMFL), Florida State Univ. (FSU), DRAGANA POPOVIĆ, NHMFL/FSU, CHRISTOS PANAGOPOULOS, Cavendish Laboratory, Univ. of Cambridge, TAKAO SASAGAWA, Materials and Structures Laboratory, Tokyo Institute of Technology — We report a detailed comparative study of magnetotransport and noise in high quality single crystals of $La_{2-x}Sr_xCuO_4$ (LSCO) and $La_2Cu_{1-x}Li_xO_4$ ($x = 0.03$) at temperatures $0.100 \leq T(\mathrm{K}) \leq 150$ and fields $0 \leq B(\mathrm{T}) \leq 18$ parallel and perpendicular to the c-axis. Our results demonstrate that, in both materials at low T, the positive magnetoresistance (MR) exhibits signatures of glassiness, such as hysteretic behavior and memory. At such low $T \ll T_{sg}$ (T_{sg} – spin glass transition temperature) , the resistance noise data reveal other glassy features, such as slowing down of the charge dynamics and the onset of cooperativity as T is reduced. The crossover to negative MR takes place at higher T and B in all samples and for both B orientations. However, for $B \parallel c$, a steplike decrease in MR has been observed only in $La_2Cu_{1-x}Li_xO_4$ at high T, as the system enters the Néel state, similar to the result obtained on antiferromagnetic LSCO with $x = 0.01$ [1]. *Supported by NSF No. DMR-0403491, NHMFL via NSF No. DMR-0084173, and The Royal Society.

[1] Y. Ando *et al.*, Phys. Rev. Lett. **90**, 247003 (2003).

Ivana Raičević
Dept. of Physics and National High Magnetic Field Laboratory (NHMFL),
Florida State Univ. (FSU)

Date submitted: 18 Dec 2007 Electronic form version 1.4