Abstract Submitted
for the MAR16 Meeting of
The American Physical Society

Charge transport in the electron-doped cuprate superconductors
YANGMU LI, WOJCIECH TABIS, School of Physics and Astronomy, University of Minnesota, Minneapolis, Minnesota 55455, USA, EUGENE MOTOYAMA, Department of Physics, Stanford University, Stanford, California 94305, USA, GUICHUAN YU, School of Physics and Astronomy, University of Minnesota, Minneapolis, Minnesota 55455, USA, NEVEN BARIIC, Institute of Solid State Physics, TU Wien, 1040 Vienna, Austria, MARTIN GREVEN, School of Physics and Astronomy, University of Minnesota, Minneapolis, Minnesota 55455, USA — Recent studies of the normal-state charge transport of the hole-doped cuprates have revealed that, in the pseudogap phase at moderate doping, the behavior of the charge carriers is that of a Fermi-liquid: The scattering rate exhibits quadratic temperature and frequency dependencies [1,2], and the magnetoresistance obeys Kohlers rule [3]. The cotangent of the Hall angle, which in a parabolic single-band model corresponds to the scattering rate, is also quadratic in temperature, and moreover doping and compound independent, and hence universal [4]. Importantly, this observable is insensitive to the opening of the pseudogap. In light of these findings, we will revisit the charge-transport in the electron-doped cuprates [5]. [1] N. Bariic et al., Proc. Natl. Acad. Sci. USA 110, 12235 (2013); [2] S. I. Mirzaei et al., Proc. Natl. Acad. Sci. USA 110, 5774 (2013); [3] M. K. Chan et al., Phys. Rev. Lett. 113, 177005 (2014); [4] N. Bariic et al., arXiv:1507.07885 (2015); [5] N. P. Armitage et al., Rev. Mod. Phys. 82, 2421 (2010).

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Date submitted: 05 Nov 2015 Electronic form version 1.4