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Conventional c-axis charge transport in the electron-doped cuprates[1] YANGMU LI, N. BARIŠIĆ, G. YU, School of Physics and Astronomy, University of Minnesota, Minneapolis, MN 55455, E.M. MOTOYAMA, I.M. VISHIK, Departments of Physics and Applied Physics, Stanford University, Stanford, CA 94305, S.T. HANNAHS, National High Magnetic Field Laboratory, Tallahassee, FL, 32310, M. GREVEN, School of Physics and Astronomy, University of Minnesota, Minneapolis, MN 55455 — We have measured the interlayer (c-axis) magnetoresistivity of the electron-doped cuprate superconductor $Nd_{2-x}Ce_xCuO_{4+\delta}$(NCCO) at and below optimal doping. In zero magnetic field, the low- and intermediate-temperature regimes are dominated by logarithmic and quadratic temperature dependences, respectively. The low-temperature logarithmic upturn indicates the onset of localization, whereas the quadratic dependence is attributed to Fermi-liquid behavior. Furthermore, the transverse c-axis magnetoresistivity exhibits H^2 dependence, not only above the zero-field Tc, but also at lower temperature once a sufficiently large external field suppresses the superconductivity. These findings suggest that the out-of-plane conduction in the electron-doped cuprates is rather conventional.

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