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Metal-insulator transition in $YBa_2Cu_3O_\delta$ LOUIS TAILLEFER, Universite de Sherbrooke and Canadian Institute for Advanced Research, CYRIL PROUST, LNCMP Toulouse, NICOLAS DOIRON-LEYRAUD, Universite de Sherbrooke, MIKE SUTHERLAND, University of Cambridge, D. LE BOEUF, Universite de Sherbrooke, J. LEVALLOIS, M. NARDONE, LNCMP Toulouse, H. ZHANG, University of Toronto, N. HUSSEY, University of Bristol, S. ADACHI, International Superconductivity Center, RUIXING LIANG, D.A. BONN, W.N. HARDY, University of British-Columbia and CIAR — The non-superconducting ground state of the underdoped cuprates $YBa_2Cu_2O_\delta$ and $YBa_2Cu_4O_8$ was examined by measuring the electrical resistivity of high-quality single crystals in magnetic fields up to 60 T. A metal-insulator-like crossover is observed near a critical doping $p = 0.1$, i.e., far in the underdoped region. This shows that the pseudogap phase present below $T^\star$ is a metal, characterized by a resistivity of the Fermi-liquid form, $\rho_0 + AT^2$, where ρ_0 is small, just as in the strongly overdoped regime. In the metallic phase, the transverse magneto-resistance undergoes a qualitative change between $p = 0.14$, where it saturates at high field, and $p = 0.11$, where it does not saturate. This would suggest that a change in the nature of the ground state occurs in the vicinity of $p = 1/8$.

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