

Abstract Submitted
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Quantum Criticality in Electron-Doped $\text{La}_{2-x}\text{Ce}_x\text{CuO}_4$ ¹ KUI JIN, NICHOLAS BUTCH, GABRIEL DROULERS, KEVIN KIRSHENBAUM, XIAOHANG ZHANG, PAUL BACH, JOHNPIERRE PAGLIONE, RICHARD GREENE, Center for Nanophysics & Advanced Materials and Department of Physics, University of Maryland, College Park, MD 20742, USA — We studied the in-plane resistivity of over-doped $\text{La}_{2-x}\text{Ce}_x\text{CuO}_4$ thin films as a function of temperature (down to 20 mK) and in magnetic fields of up to 17 T. In zero field, we found a $\rho \sim T$ region above T_c for superconducting films and a $\rho \sim T^2$ region for non-superconducting films as $T \rightarrow 0$. The boundaries of $\rho \sim T$ and $\rho \sim T^2$ regions merge at a critical doping $x = 0.175 \pm 0.005$, which is also the boundary of the superconducting dome. In magnetic fields, the $\rho \sim T$ to $\rho \sim T^2$ transition as $T \rightarrow 0$ is shifted to lower doping with increasing field. We compare these results to related behavior in hole-doped cuprates [1] and to a recent phase diagram proposed by Sachdev [2].

[1] R.A. Cooper *et al.*, Science **323**, 603 (2009).

[2] S. Sachdev, <http://arxiv.org/abs/0907.0008V7> (2009).

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