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**Anomalous In-plane Magnetoresistance of Electron-doped Cuprate  $\text{La}_{2-x}\text{Ce}_x\text{CuO}_{4-\delta}$** <sup>1</sup> HESHAN YU, GE HE, YANLI JIA, XU ZHANG, JIE YUAN, BEIYI ZHU, Chinese Academy of Sciences (CAS), RICHARD L. GREENE, Center for Nanophysics Advanced Materials, University of Maryland, KUI JIN, Chinese Academy of Sciences (CAS) — We report the systematic in-plane magnetoresistance (MR) measurements on electron-doped cuprate  $\text{La}_{2-x}\text{Ce}_x\text{CuO}_{4-\delta}$  thin films as a function of doping and oxygen contents in the magnetic field up to 14 T. A crossover from negative magnetoresistance ( $n$ -MR) to positive magnetoresistance ( $p$ -MR) occurs between  $x = 0.07$  and  $0.08$ , corresponding to the boundary of long-range antiferromagnetic order determined by  $\mu\text{SR}$  [Saadaoui, H. *et al. Nature Commun.* **6**, 6041 (2015)]. With increasing the doping level, the  $p$ -MR effect becomes weaker and is hardly discernable at  $x = 0.15$ , in accordance with the boundary of two-dimensional antiferromagnetic order [K. Jin, *et al. Phys. Rev. B.* **80**, 012501 (2009), *Nature* 476,73(2011)]. At  $x = 0.15$ , the as-grown samples show  $n$ -MR, whereas the optimally annealed ones display  $p$ -MR, similar to that in NCCO [J. Wu *et al. Phys. Rev. Lett.* **73**, 1291(1994)] and PCCO [J. Higgins *et al. Phys. Rev. B.* **73**,104510(2006)]. We also find linear MR at  $x = 0.06$  and  $x = 0.1$ , and the plausible origins will be discussed.

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