

Abstract Submitted
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Experimental observation of magic doping fractions and two-dimensional charge ordering in $\text{La}_{2-x}\text{Sr}_x\text{CuO}_4$ SEIKI KOMIYA, Central Research Institute of Electric Power Industry, H.-D. CHEN, S.-C. ZHANG, Stanford University, YOICHI ANDO, Central Research Institute of Electric Power Industry — Competing order is currently an issue of controversy in the study of high temperature superconductivity. In LSCO, neutron scattering experiments have found one-dimensional spin stripes; however, it is unclear whether LSCO has some sort of charge-ordered state. If there is a charge-ordered state in LSCO, the charge ordering tendency is expected to be pronounced near certain doping levels where the charge modulation is commensurate with the underlying lattice; therefore, to examine the nature of possible charge ordering in LSCO, we have carefully measured the hole-doping dependence of the in-plane resistivity using a series of high-quality single crystals. Our detailed measurements find a tendency toward charge ordering at particular rational hole doping fractions of $1/16$, $3/32$, $1/8$, and $3/16$. This observation is most consistent with a recent theoretical prediction of the checkerboard-type ordering of the Cooper pairs at rational doping fractions $x = (2m + 1)/2^n$, with integers m and n .

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