

Abstract Submitted
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Electron microscopic studies of the charge-ordered structures of the bilayered colossal magnetoresistive (CMR) manganite $\text{La}_{2-2x}\text{Sr}_{1+2x}\text{Mn}_2\text{O}_7$ ZHIPING LUO, Microscopy and Imaging Center, Texas A&M University — The charge-ordered structures in the bilayered colossal magnetoresistive (CMR) manganite $\text{La}_{2-2x}\text{Sr}_{1+2x}\text{Mn}_2\text{O}_7$, at the electronic doping levels of $x=0.6$ and $x=0.67$ respectively, have been proposed based on the *in-situ* electron microscopic studies. In sharp contrast to the three-dimensional perovskite manganite, evidence of charge-ordered structures with bi-stripe models has been found. A new face-centered charge-ordered superstructure was observed at $x=0.6$. This structure is composed of bi-stripes of Mn^{3+}O_6 and paired Mn^{4+}O_6 rows alternatively stacking along the ordering direction, which is assembled from the building blocks of the charge-ordered phase at $x=0.5$. Taking into account of the systematic absence of reflections with the face-centered symmetry, its modulation vector was deduced as $\mathbf{q}=(1/10, 1/10, 0)$. Moreover, for another charge-ordered phase identified at $x=0.67$ with $\mathbf{q}=(1/6, 1/6, 0)$, again only the bi-stripe model fits the existing data over the Wigner-crystal model.

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