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Non-monotonic Fermi surface geometry and its correlation with real-space ordering in the bilayer magnetoresistive oxide $\mathbf{La_{2-2x}Sr_{1+2x}Mn_2O_7}$ ZHE SUN, J.F. DOUGLAS, Q. WANG, Department of Physics, University of Colorado, Boulder, CO 80309, USA, Y.D. CHUANG, A.V. FEDOROV, Advanced Light Source, Lawrence Berkeley National Laboratory, Berkeley, CA 94720, USA, H. LIN, S. SAHRAKORPI, B. BARBIELLINI, R.S. MARKIEWICZ, A. BANSIL, Department of Physics, Northeastern University, Boston, MA 02115, USA, H. ZHENG, J.F. MITCHELL, Materials Science Division, Argonne National Laboratory, Argonne, IL 60439, USA, D.S. DESSAU, Department of Physics, University of Colorado, Boulder, CO 80309, USA — Angle-resolved photoemission spectroscopy was used to study the Fermi surface and nesting effects for a wide range of doping levels (x) of $La_{2-2x}Sr_{1+2x}Mn_2O_7$. While band structure calculations indicate a monotonic trend in the size of each piece of the Fermi surface, our data indicates non-monotonic trends which are consistent with the evolution of the charge modulations, unequivocally confirming the direct connection between the nesting and the charge correlation vectors. This may be classified as a key example of a system with a strongly k-dependent self-energy.

Zhe Sun
Department of Physics, University of Colorado, Boulder, CO 80309, USA

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