

Abstract Submitted
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Is CE-type orbital order the true ground state for $\text{LaSr}_2\text{Mn}_2\text{O}_7$?¹
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gonne National Laboratory — Previous scattering and conductivity data for
 $\text{La}_{2-2x}\text{Sr}_{1+2x}\text{Mn}_2\text{O}_7$ ($x=0.5$) indicate the CE phase, predicted by Goodenough 50
years ago, is only stable between ~ 100 and 200 K and below ~ 100 K an A-type anti-
ferromagnet is the ground state. We present scattering, magnetization and transport
evidence that the CE phase is the ground state, but only in a very narrow compo-
sition range, presumably at exactly $x=0.5$. The vitally important roles of crystal
homogeneity and methodology of transport measurements will be demonstrated for
this conclusion as well as for the field of layered manganites in general.

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