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Electronic and magnetic properties of quadruple manganite $\text{Ca}_{1-x}\text{Sr}_x\text{Mn}_7\text{O}_{12}$ films AMANDA HUON, STEVEN MAY, Drexel University — We investigate the functional properties of epitaxial $\text{Ca}_{1-x}\text{Sr}_x\text{Mn}_7\text{O}_{12}$ films to better understand the underlying physical phenomenon in this perovskite system. We utilize oxide molecular beam epitaxy to fabricate $\text{Ca}_{1-x}\text{Sr}_x\text{Mn}_7\text{O}_{12}$ thin films. The epitaxial films were achieved through a two-step oxygen/ozone post-growth anneal. In parent $x=0$ films, we find bulk-like electronic and magnetic properties including an abrupt increase in resistivity at 425 K due to a nominal charge ordering transition and a net magnetization below 43 K likely arising from helical magnetic order. Finally, we will present on how tuning the Sr concentration alters the electronic and magnetic properties, providing a means to control the phase transition temperatures. The results highlight the scientific opportunities in heterostructures based on quadruple manganites.

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