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Evolution of Physical Properties with Mn Content in $\mathbf{Sr_3(Ru_{1-x}Mn_x)_2O_7}$ Single Crystals BIAO HU, E.W. PLUMMER, R. JIN, Department of physics and Astronomy, Louisiana State University — We have systematically studied the doping dependence of physical properties of $Sr_3(Ru_{1-x}Mn_x)_2O_7$with $0.0 \leq x \leq 1.0$. Although the undoped $Sr_3Ru_2O_7$ is a paramagnetic metal, partial substitution of Ru by Mn results not only in metal-insulating transition (T_{MIT}) but also in complex magnetic ordering at T_M. Interestingly, the difference between T_M and T_{MIT} ($T_M < T_{MIT}$) increases with increasing doping level x. The correlation between these two transitions will be reported.

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