

Abstract Submitted
for the MAR07 Meeting of
The American Physical Society

In-plane anisotropy of magnetoresistivity of tri-layered ruthenate $\text{Sr}_4\text{Ru}_3\text{O}_{10}$ Z.Q. MAO, M. ZHOU, D. FOBES, Tulane University, H.Q. YUAN, M. SALAMON, University of Illinois at Urbana-Champaign — The tri-layered ruthenate $\text{Sr}_4\text{Ru}_3\text{O}_{10}$ exhibits intriguing magnetic properties; its ferromagnetic transition at $T_c \approx 105$ K is followed by an additional magnetic phase transition at $T^* \approx 50$ K [1,2]. Below T^* , a first order metamagnetic transition is induced by a magnetic field applied in the plane. We have recently measured the in-plane angular dependence of magnetoresistivity of this material at various magnetic fields and temperatures. Our data reveal that the in-plane anisotropy of magnetoresistivity undergoes a transition from two-fold to four-fold symmetry across the metamagnetic transition of $\text{Sr}_4\text{Ru}_3\text{O}_{10}$. Such a transition can be well interpreted in terms of a multiple-band effect which involves the coexistence of ferromagnetic and metamagnetic bands.

[1] G. Cao *et al.*, Phys. Rev. B **68**, 174409 (2003).

[2] Z.Q. Mao *et al.*, Phys. Rev. Lett. **96**, 077205 (2006).

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Date submitted: 17 Nov 2006

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