

Abstract Submitted  
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**Quantum Oscillations and Competing Ground States in triple layered Sr<sub>4</sub>Ru<sub>3</sub>O<sub>10</sub>** V. DURAIRAJ, X.N. LIN, S. CHIKARA, E. ELHAMI, V.A. BONDARENKO, J.W. BRILL, G. CAO, Department of Physics and Astronomy, University of Kentucky, Lexington, KY40506, USA, S. PARKIN, Department of Chemistry, University of Kentucky, Lexington, KY40506, USA, L. BALICAS, Y. XIN, National High Magnetic Field Lab, Tallahassee, FL32310, USA — The triple-layered Sr<sub>4</sub>Ru<sub>3</sub>O<sub>10</sub> is characterized by an unexpectedly strong quasi-two dimensional characteristic, and a sharp metamagnetic transition and ferromagnetic behavior occurring within the basal plane and along the c axis, respectively. The interplane resistivity at magnetic field B, up to 45 T, exhibits low-frequency quantum oscillations associated with the spin polarized state when B is parallel to the c axis, and a large magnetoresistivity accompanied by critical fluctuations governed by the metamagnetic transition when B is perpendicular to the c axis. The complex behavior evidenced in magnetization, specific heat, and resistivity presented is not characteristic of any obvious ground states, and points to an unusual state that shows a delicate balance between fluctuations and order. The results will be presented and discussed along with comparisons with data of impurity doped Sr<sub>4</sub>Ru<sub>3</sub>O<sub>10</sub>.

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