Abstract Submitted
for the MAR09 Meeting of
The American Physical Society

Non-Fermi-liquid behavior in nearly ferromagnetic $SrIrO_3$ single crystals[1] T.F. QI, S. CHIKARA, O.B. KORNETA, S. PARKIN, L.E. DE LONG, G. CAO, University of Kentucky, P. SCHLOTTMANN, Florida State University — We report magnetic, electric transport, and calorimetric properties of single-crystal $SrIrO_3$ as a function of temperature T and applied magnetic field H. We find that $SrIrO_3$is a non-Fermi-liquid metal near a ferromagnetic instability, as characterized by the following properties: (1) small saturation moment and no evidence for long-range order down to 1.7 K, (2) strongly enhanced magnetic susceptibility that diverges as T^{γ} at low temperatures with $1/2< \gamma <1$, depending on the applied field, (3) heat capacity $C(T,H) \sim \quad -T\ln T$that is readily enhanced in low applied fields, and (4) $T^{3/2}$ dependence of electrical resistivity over the range 1.7 K$< T <$120 K. The data imply $SrIrO_3$ is a rare example of a stoichiometric oxide compound that exhibits non-Fermi-liquid behavior near a quantum critical point (T=0 and $\mu_0 H$=0.23 T). The results will be presented and discussed along with these of a similar system $CaRuO_3$.

[1]This work was supported by NSF through grant DMR-0552267

T.F. Qi
University of Kentucky

Date submitted: 20 Nov 2008 Electronic form version 1.4