Abstract Submitted
for the MAR05 Meeting of
The American Physical Society

The symmetry of the superconducting order parameter in $\mathbf{PuCoGa_5}$ R.H. HEFFNER, Los Alamos National Lab, G.D. MORRIS, TRIUMF, E.D. BAUER, L.A. MORALES, J.S. SARRAO, Los Alamos National Lab, M.J. FLUSS, Lawrence Livermore National Lab, D.E. MACLAUGHLIN, L. SHU, J.E. ANDERSON, University of California, Riverside — The symmetry of the superconducting order parameter in single- crystalline $PuCoGa_5$ ($T_c = 18.5$ K) is investigated via zero- and transverse- field muon spin relaxation (μSR) measurements, probing the possible existence of orbital and/or spin moments (time reversal-symmetry violation TRV) associated with the superconducting phase and the in-plane magnetic-field penetration depth $\lambda(T)$ in the mixed state, respectively. We find no evidence for TRV, and show that $\Delta\lambda(T) = \lambda(T) - \lambda(0) \propto T$ for $T/T_c \leq 0.5$. Taken together these measurements are consistent with an even-parity (pseudo-spin singlet), d-wave pairing state.

Robert Heffner
Los Alamos National Lab

Date submitted: 01 Dec 2004 Electronic form version 1.4