Abstract Submitted
for the MAR07 Meeting of
The American Physical Society

**Effect of pressure on hole-doped $CeCoIn_5$ and $CeRhIn_5$.**[1] V. A. SIDOROV, TUSON PARK, J. D. THOMPSON, Los Alamos National Lab, L. D. PHAM, S. MAQUILON, U. C. Davis, Z. FISK, U. C. Irvine — With one less p-electron than In, Cd or Hg adds one hole per substituted In in $CeMIn_5$ (M=Co,Rh, Ir). Progressive Cd/Hg substitutions tune the ground state of superconducting $CeCoIn_5$ to one of coexisting magnetism and superconductivity and eventually to antiferromagnetic only. This systematic evolution of states in doped $CeCoIn_5$ is reversed accurately by applied pressure and maps onto the temperature-pressure phase diagram of pure $CeRhIn_5$. These observations, together with the response of Cd-substituted $CeRhIn_5$ to applied pressure, show that ground states of $CeMIn_5$ are controlled by fine details of electronic structure and that disorder on the In site and different ionic radii of Cd and Hg have an insignificant effect.

[1]ZF, LDP and SM acknowledge support by NSF-DMR-0503360. Work at Los Alamos was performed under the auspices of the US DOE, Office of Science.

Joe Thompson
Los Alamos National Lab

Date submitted: 19 Nov 2006 Electronic form version 1.4