Abstract Submitted
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Interplay of Magnetism and Superconductivity in CeM($In_{1-x}Hg_x$)$_5$[1] E.D. BAUER, F. RONNING, Y. TOKIWA, J.D. THOMPSON, R. MOVSHOVICH, LANL, Z. FISK, UC-Irvine — The $CeMIn_5$ (M=Co, Rh, Ir) heavy fermion superconductors have attracted interest in recent years due to their high superconducting transition temperatures (e.g., T_c=2.3 K in $CeCoIn_5$), unconventional superconductivity, and magnetic- field induced exotic ground states. In particular, field- induced quantum criticality at the upper critical field H_{c2}=5 T in $CeCoIn_5$ and a possible field-induced magnetic state within the superconducting state suggests close proximity to antiferromagnetism.[1] The exciting discovery of slight changes in the electronic structure of $CeMIn_5$ with Cd or Hg substitution[2] at the percent level in $CeCoIn_5$ appears to have "uncovered" the hidden magnetism in this material. Therefore, substitution of Hg in $CeMIn_5$ offers yet another way to probe the proximity to magnetism in $CeCoIn_5$, the field-induced magnetic state under pressure in $CeRhIn_5$, and the coexistence of magnetism and superconductivity. The physical properties of CeM($In_{1-x}Hg_x$)$_5$ system will be discussed and contrasted with those found with isoelectronic substitutions. [1] J. Paglione *et al.* Phys. Rev. Lett. **91** 246405 (2003); A. Binachi *et al.* Phys. Rev. Lett. **91** 257001 (2003) [2] L.D. Pham *et al.* Phys. Rev. Lett. **97** 056404 (2006)

[1]Work at Los Alamos peformed under the auspices of the US DOE.

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