Abstract Submitted
for the MAR08 Meeting of
The American Physical Society

Evolution of the FFLO state of $CeCo(In_{1-x}Hg_x)_5$ ROMAN MOVSHOVICH, YOSHIFUMI TOKIWA, Los Alamos National Laboratory, ANDREA BIANCHI, Département de physique, Université de Montréal, ERIC BAUER, Los Alamos National Laboratory — Specific heat C(T) of the unconventional superconductor $CeCoIn_5$displays an anomaly within the superconducting (SC) state, indicating an additional SC phase in the high field and low temperature corner of the SC state of the H-T phase diagram. This SC state was previously proposed to be an inhomogeneous superconducting FFLO state. We have performed specific heat measurements of very low Hg-doped samples with x=0.001, 0.002 and 0.003, in order to study the evolution of the proposed FFLO state in $CeCoIn_5$. In a sample with x=0.001, C(T) still shows the additional transition inside the SC state, but it is broadened. The transition temperature is slightly higher than that of pure compound. C(T) of a higher Hg-doped sample with x=0.003 displays a very shallow and broad hump around the same temperature. Given that only 20% of the nominal Hg concentration goes into the sample, the FFLO state appears to be extremely sensitive to the presence of impurities.

Roman Movshovich
Los Alamos National Laboratory

Date submitted: 14 Dec 2007 Electronic form version 1.4