Abstract Submitted
for the MAR07 Meeting of
The American Physical Society

Evolution of FFLO state of $\mathbf{CeCo(In_{1-x}Cd_x)_5}$ YOSHIFUMI TOKIWA, FILIP RONNING, JOE THOMPSON, ROMAN MOVSHOVICH, Los Alamos National Laboratory, LONG PHAM, University of California, Davis, ZACHARY FISK, University of California, Irvine — Unconventional superconductor $CeCoIn_5$ at high magnetic field displays first order superconducting transition and an additional high field-low temperature superconducting phase (previously proposed to be an inhomogeneous superconducting FFLO state). Both phenomena were attributed to strong Pauli limiting effects. Our specific heat measurements on low Cd-doping (for In) samples, at fields close to the superconducting critical field H_{c2}, show that superconducting transition remains first order for samples with H_{c2} up to 5.7 T (from 4.95 T in a pure compound), for field out of plane orientation ($H \quad || \quad c$). We discuss systematic evolution of the proposed FFLO state with Cd content.

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Date submitted: 15 Nov 2006 Electronic form version 1.4