Abstract Submitted
for the MAR17 Meeting of
The American Physical Society

3D Fermi Surface of $CeCoIn_5$ from ARPES and DMFT[1] J.D. DENLINGER, SOOYOUNG JANG, Lawrence Berkeley Nat'l Lab, J.W. ALLEN, U. of Michigan, V.S. ZAPF, Los Alamos Nat'l Lab, M.B. MAPLE, UC San Diego, JAE NYEONG KIM, BO-GYU JANG, JI HOON SHIM, POSTECH — The three-dimensional Fermi surface (FS) of the Kondo lattice system $CeCoIn_5$ is determined using angle-resolved photoemission (ARPES) with comparison to first principles dynamical mean field theory (DMFT) calculations. Photon-, angle- and polarization-dependent ARPES mapping of the electronic structure from two orthogonal (001) and (100) cleaved surfaces reveals the deficiencies of both *f-itinerant* and *f-localized* density functional theory (DFT) calculations. While the well-known quasi-2D α sheet and the 3D β sheet FS topologies are well described by *itinerant* DFT, a complex γ hole-like FS topology centered on Z is newly revealed which exists only in the *localized* DFT, and yet it hosts strong f spectral weight as highlighted by Ce $4d$-$4f$ resonant ARPES. DMFT is shown to capture the low energy scale participation of f electrons in the *localized-like* FS topology in agreement with ARPES, as well as reveal insights into the origins of differing effective masses of FS sheets from the complex hybridization interaction with the ground-state and first-excited CEF f-levels.

[1]Supported by U.S. DOE at the Advanced Light Source (DE-AC02-05CH11231).

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Date submitted: 02 Dec 2016 Electronic form version 1.4