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Abrupt electronic structure changes in URu_2Si_2 at the Hidden Order transition[1] J.D. DENLINGER, Lawrence Berkeley Nat'l Lab, J.W. ALLEN, U. of Michigan, L. DUDY, U. Wuerzburg, Germany, JEONGSOO KANG, Catholic U. of Korea, N.P. BUTCH, U. of Maryland, M.B. MAPLE, UC San Diego — In recent years, high-resolution angle-resolved photoemission (ARPES) measurements of URu_2Si_2 [1] have attempted to characterized the temperature dependent behavior of f-states close to the Fermi level in the range of photon energies of 7-31 eV and in a narrow k-space range around the surface zone center revealing varying ways in which energy shifts, backfolding of states and/or spectral weight sharpening correlate to the hidden order transition at 17.5K. In this study we expand the temperature dependent ARPES measurements to a broader range of photon energy and emission angles in order to probe the full 3-dimensional electronic structure. We find particular k-space regions close to incommensurate wave vector separation that exhibit dramatic electronic structure changes that are abrupt at the hidden order transition and whose evolution to higher temperatures correlates to a gradual Kondo coherence transition below $\sim$50K. A critical assessment of these electronic structure changes in relation to LDA band structure predictions is discussed.

[1] A.F. Santander-Syro, Nat. Phys. 2009; R. Yoshida, PRB 2010; G.L. Dakovski, PRB 2011; F.L. Boariu, PRL 2013; S. Chatterjee, PRL 2013; J.Q. Meng, PRL 2013.

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