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Kondo Interactions from Band Reconstruction in $YbInCu_4$ JASON HANCOCK, University of Connecticut, IGNACE JARRIGE, Brookhaven National Laboratory, AKIO KOTANI, Photon Factory, H. YAMAOKA, RIKEN, N. TSUIJII, K. ISHII, JAEA, M. UPTON, D. CASA, J. KIM, T. GOG, Argonne — We combine resonant inelastic x-ray scattering and model calculations in the Kondo lattice compound $YbInCu_4$, a system characterized by a dramatic increase in Kondo temperature and associated valence fluctuations below a first-order valence transition at $T \simeq 42$ K. The bulk-sensitive, element-specific, and valence-projected charge excitation spectra reveal an unusual quasigap in the Yb-derived state density which drives an instability of the electronic structure and renormalizes the low-energy effective Hamiltonian at the transition. Our results provide long-sought experimental evidence for a link between temperature-driven changes in the low-energy Kondo scale and the higher-energy electronic structure of this system.

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