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Many-body coherence in f -electron $\text{Ce}_{1-x}\text{Yb}_x\text{CoIn}_5$ alloys¹ Y.P. SINGH, D.J. HANEY, X.Y. HUANG, M. DZERO, Kent State University, I. LUM, B.D. WHITE, M.B. MAPLE, University of California, San Diego, C.C. ALMASAN, Kent State University — We investigated experimentally the onset of the many-body coherence in the f -orbital single crystalline alloys $\text{Ce}_{1-x}\text{Yb}_x\text{CoIn}_5$ ($0.00 \leq x \leq 0.775$). Specifically, we performed thermodynamic and magneto-transport measurements to study the evolution of the many-body electronic state as the Kondo lattice of Ce moments is transformed into an array of Ce impurities. Our analysis of the residual resistivity data unveils the presence of correlations between Yb ions for $x > 0.50$. For concentrations around 50% of Yb we observe the smooth crossover from the predominantly localized moment regime to the predominantly itinerant regime. Indeed, our analysis of specific heat data reveals that for $0.65 \leq x \leq 0.775$, Yb f -electrons strongly interact with the conduction electrons while the Ce moments remain completely decoupled. The sub-linear temperature dependence of resistivity across the whole range of Yb concentrations suggests the presence of a nontrivial scattering mechanism for the conduction electrons.

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