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Remarkably robust and correlated coherence and antiferromagnetism in $(\text{Ce}_{1-x}\text{La}_x)\text{Cu}_2\text{Ge}_2$ single crystals H. HODOVANETS, S.L. BUD'KO, W.E. STRASZHEIM, V. TAUFOR, E.D. MUN, H. KIM, P.C. CANFIELD, Ames Laboratory and Department of Physics & Astronomy, Iowa State University, Ames, IA — We present results of transport and thermodynamic measurements on La diluted Kondo lattice compound CeCu_2Ge_2 . La-substitution suppresses T_N in an almost linear fashion from ~ 4 K, for $x = 0$, to below 0.36 K, for $x > 0.8$. Curiously, the system also shows low temperature coherent scattering below T_{coh} up to ~ 0.9 of La, indicating a small percolation limit $\sim 9\%$ of Ce that separates a coherent state from a single-ion Kondo impurity state. $T_{coh}(H)$ was found to have different functional dependencies in coherent and single-ion regimes. Surprisingly, $(T_{coh})^2$ was found to be proportional to T_N over wide range of x . For Ce concentrations, $y = 1 - x$, in the range $0.01 \leq y \leq 0.08$, T_{min} in the resistivity data is proportional to $y_{Ce}^{1/5}$ and field-dependent thermopower shows features as expected for the single-ion Kondo impurity. This work was supported by the Department of Energy, Basic Energy Sciences under Contract No. DE-AC02-07CH11358 and the AFOSR-MURI grant No. FA9550-09-1-0603.

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