

Abstract Submitted  
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**Effect of Kondo-lattice coherence on the phononic and electronic excitations of CeCoIn<sub>5</sub>**<sup>1</sup> MAI YE, HSIANG-HSI KUNG, Rutgers University, PRISCILA ROSA, ERIC BAUER, Los Alamos National Laboratory, KRISTJAN HAULE, GIRSH BLUMBERG, Rutgers University — Heavy fermion metal CeCoIn<sub>5</sub> has a coherence temperature  $T^*=45\text{K}$ , below which individual Kondo singlets evolve into a coherent Kondo lattice [P. Coleman, *Introduction to Many-Body Physics* (Cambridge University Press, 2015)]. We study the phononic and electronic excitations of this compound by inelastic light scattering. Two optical phonon modes exhibit anomalies in their temperature dependence of frequency and linewidth below  $T^*$ . Such anomalous behaviors result from developing coherent spectral weight at the Fermi level and reducing electron-phonon scattering rate. Moreover, below  $T^*$  the  $B_{2g}$ -symmetry electronic excitations are suppressed up to  $50\text{cm}^{-1}$ ; the suppressed Raman response follows a cubic power law. These results support  $T^*$  as the characteristic temperature marking the development of Kondo-lattice coherence.

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Mai Ye  
Rutgers University

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