

Abstract Submitted
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Hexadecapolar Kondo effect in URu₂Si₂? ANNA TOTH, GABRIEL KOTLIAR — Motivated by recent findings on the electronic structure of URu₂Si₂, we derive the coupling of a localized hexadecapolar mode to itinerant fermionic quasiparticles in tetragonal crystal field, and show how it maps onto the two-channel Kondo (2CK) model. Channel symmetry is a consequence of time-reversal symmetry, and a 2CK regime can be observed if the crystal field splitting is less than the Kondo temperature. Corollary to the derivation, for an f^2 -configuration in tetragonal environment, a relevant crystal field splitting is always present in addition to the 2CK interaction—even if the local degrees of freedom are a Γ_5 doublet. Solving the coupling by the numerical renormalization group, we are able to fit the susceptibility and the specific heat of the dilute system, Th_{1-x}U_xRu₂Si₂, in magnetic field and place the measurements on the verge of the local moment and the 2CK regimes.

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