

Abstract Submitted  
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**Triplet pairing via Kondo hybridization - applications to  $\text{UTe}_2$  and  $\text{CeRh}_2\text{As}_2$** <sup>1</sup> TAMAGHNA HAZRA, PIERS COLEMAN, Rutgers University — We explore pairing mechanisms for triplet superconductivity mediated by Kondo interactions, relevant for  $\text{UTe}_2$  and  $\text{CeRh}_2\text{As}_2$ . In these systems, the upper critical field violates the Pauli limit by an order of magnitude, and there are multiple distinct superconducting phases which appear to be enhanced and even enabled by strong magnetic fields. Taken together, the experimental puzzles raised by these systems challenge our current understanding of heavy fermion superconductivity and raise the intriguing possibility of a very new kind of superconductivity driven by the local moments of U and Ce. We seek to unify the Kondo physics with the triplet pairing in a coherent framework. With this motivation, we present a mean-field analysis of a simple two-channel Kondo model which has two spins at locally-noncentrosymmetric sites in the unit cell, inspired by  $\text{UTe}_2$  and  $\text{CeRh}_2\text{As}_2$ , which illustrates the emergence of local triplet correlations as a result of Kondo hybridization with spin-orbit coupled local moments. In the spirit of a resonating valence bond picture, the superconductivity can be understood as the condensation of spin-triplet pre-formed pairs which are odd under exchange of the two U/Ce sites.

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Tamaghna Hazra  
Rutgers University

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