

"The Unsolved problem of Heavy Fermion Superconductivity"

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The discovery of heavy fermion superconductivity is more than 30 years old, but the community was slow to accept the initial discovery and the phenomenon of electronically mediated pairing was first confirmed 30 years ago. While some heavy fermion superconductors such as CeCu_2Si_2 , are the best known examples of spin-fluctuation exchange materials, a large fraction of "bad actors", including the second oldest material URu_2Si_2 and the family of "115" materials, pose a major problem to our understanding. I shall review the field and the challenges it poses to our understanding of both rare earth and transition metal temperature superconductivity.