

Abstract Submitted
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Realistic model of cubic hastatic order JOHN VAN DYKE,
GUANGHUA ZHANG, REBECCA FLINT, Iowa State University — We study
the role of Kondo physics in cubic materials with non-Kramers doublet ground
states, motivated by PrV₂Al₂₀ and other compounds. These systems generically
display a two-channel Kondo effect, involving valence fluctuations between the non-
Kramers doublet ground state and an excited Kramers doublet. In contrast to the
single channel case, here the formation of a heavy Fermi liquid or Kondo insulator
requires a channel symmetry-breaking phase transition, known as hastatic order.
Introducing a simple but realistic two-channel Anderson lattice model, we explore
the experimental consequences of hastatic order. These include a necessary breaking
of time-reversal symmetry as indicated by the development of a conduction electron
magnetic moment.

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