

Abstract Submitted
for the MAR11 Meeting of
The American Physical Society

Zeeman-driven Lifshitz transition: A scenario for the Fermi-surface reconstruction in YbRh₂Si₂ MATTHIAS VOJTA, Technische Universitaet Dresden, ANDREAS HACKL, California Institute of Technology — The heavy-fermion metal YbRh₂Si₂ displays a field-driven quantum phase transition where signatures of a Fermi-surface reconstruction have been identified, often interpreted as breakdown of the Kondo effect. We argue that instead many properties of the material can be consistently described assuming a Zeeman-driven Lifshitz transition of heavy-fermion bands. Using a suitable quasiparticle model, we find a smeared jump in the Hall constant and maxima in susceptibility and specific heat, very similar to experimental data. An intermediate non-Fermi liquid regime emerges due to the small effective Fermi energy near the transition. Further experiments to discriminate the different scenarios are proposed.

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Date submitted: 19 Nov 2010

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