Abstract Submitted
for the MAR08 Meeting of
The American Physical Society

Fermi Surface and Symmetry of Magnetic Quantum Phases in Heavy Fermion Metals SEIJI YAMAMOTO, QIMIAO SI, Rice University — Magnetic ordering in heavy fermion metals is typically antiferromagnetic, although ferromagnetic ordering does occur in some materials, such as CeRu2Ge2. Extending a previously developed framework [1] for the antiferromagnetic Kondo lattice, we now consider the case where the magnitude of the antiferromagnetic Kondo coupling is small compared to the ferromagnetic RKKY interactions. The coupling between spin waves and conduction electrons is relevant, resulting in a change in the form of the QNLsM in the appropriate energy and momentum range. At the lowest energies, a gap in the continuum of excitations renders the Kondo coupling irrelevant. We conclude that a ferromagnetic state with a "small" Fermi surface (where local moments are NOT included in the Fermi volume) is stable. Finally, we discuss how the lack of Kondo screening in magnetic metal phases is reflected in symmetry properties. We show that, in some cases, spin symmetry breaking does not lead to a reduction of spin symmetry, further emphasizing the need to go beyond the conventional order parameter to characterize these magnetic quantum phases. [1] S. J. Yamamoto and Q. Si, Phys. Rev. Lett. 99, 016401 (2007)

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Date submitted: 27 Nov 2007 Electronic form version 1.4