Abstract Submitted
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Singular Valence Fluctuations at a Kondo Destroyed Quantum Critical Point[1] JEDEDIAH PIXLEY, Rice University, STEFAN KIRCHNER, Max Planck Institute for the Physics of Complex Systems, KEVIN INGERSENT, University of Florida, QIMIAO SI, Rice University — Recent experiments on the heavy fermion superconductor \beta-YbAlB4 have indicated that this compound satisfies quantum critical scaling [1]. Motivated by the observation of mixed valency in this material [2], we study the Kondo destruction physics in the mixed-valence regime [3] of a particle-hole asymmetric Anderson impurity model with a pseudogapped density of states. In the vicinity of the quantum critical point we determine the finite temperature spin and charge susceptibilities by utilizing a continuous time quantum Monte Carlo method [4] and the numerical renormalization group. We show that this mixed-valence quantum critical point displays a Kondo breakdown effect. Furthermore, we find that both dynamic spin and charge susceptibilities obey frequency over temperature scaling, and that the static charge susceptibility diverges with a universal exponent. Possible implications of our results for \beta-YbAlB4 are discussed. [1] Matsumoto et al, Science **331**, 316 (2011). [2] Okawaet al, Physical Review Letters **104**, 247201 (2010). [3] J. H. Pixley, S. Kirchner, Kevin Ingersent and Q. Si, arXiv:1108.5227v1 (2011). [4] M. Glossop, S. Kirchner, J. H. Pixley and Q. Si, Phys. Rev. Lett. **107**, 076404 (2011).

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