

Abstract Submitted
for the MAR16 Meeting of
The American Physical Society

Global phase diagram and single particle excitations in Kondo insulators QIMIAO SI, Rice University, JEDEDIAH PIXLEY, Condensed Matter Theory Center and Joint Quantum Institute, Department of Physics, University of Maryland, RONG YU, Department of Physics, Renmin University of China, SILKE PASCHEN, Institute of Solid State Physics, Vienna University of Technology — Motivated by quantum criticality in Kondo insulators [1] tuned by pressure or doping we study the effects of magnetic frustration and the properties of the single particle excitations in a Kondo lattice model [2]. Focusing on the Kondo insulating limit we study the Shastry-Sutherland Kondo lattice and determine the zero temperature phase diagram, which incorporates a valence bond solid, antiferromagnet, and Kondo insulating ground states, with metal-to-insulator quantum phase transitions. We argue that this phase diagram is generic and represents a “global” phase diagram of Kondo insulators in terms of quantum fluctuations and the Kondo interaction. We then focus on the momentum distribution of single particle excitations within the Kondo insulating ground state. We show how features of the Fermi-surface of the underlying conduction electrons appear in the Kondo insulating phase. Lastly, we discuss the implications of our results for quantum criticality in Kondo insulators [1] as well as for the recent de Haas-von Alphen measurements in the Kondo insulator SmB6 [3,4]. [1] Q. Si and S. Paschen, *physica status solidi (b)* 250, 425 (2013). [2] J. H. Pixley, et. al., arXiv:1509.02907 (2015). [3] B. Tan et al, *Science* 349, 287 (2015). [4] G. Li et al, *Science* 346, 1208 (2014).

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Date submitted: 02 Dec 2015

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