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Mapping the effect of frustration on the Kondo Lattice[1]

PIERS COLEMAN, Rutgers University

The effect of quantum zero point fluctuations on strongly correlated electron systems, and their ability to transform the state of matter through a quantum phase transition, constitutes a major area of interest in condensed matter systems. I will discuss efforts, both experimental [1,2] and theoretical [3] to unify our understanding of zero point fluctuations in the context of frustrated quantum antiferromagnets, with our understanding of the Kondo lattice that describes heavy electron materials on the brink of magnetism. One of the interesting predictions of a unified approach, is the existence of a new kind of "spin liquid metal" phase perched between the antiferromagnet and the heavy electron Fermi liquid. I will discuss our efforts to describe this state theoretically and present recent candidate observations of this phenomenon.

[1] Sven Friedemann et al., Nature Physics, **5**, 465 (2009).
[2] Jeroen Custers et al., to be published (2010).
[3] Andriy Nevidomskyy and P. Coleman, to be published (2010).

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