A new mean field theory for the emergence of magnetism in the Kondo lattice JEROME RECH, PIERS COLEMAN, Rutgers University, OLIVIER PARCOLLET, SPhT CEA Saclay, GERGELY ZARAND, Budapest University of Technology and Economics — We present a new mean-field theory of the Kondo lattice model, which is exact in the large N limit, that is able to span the heavy magnetic quantum critical point of the Kondo lattice. Our approach unifies the Kondo impurity approach of Parcollet and Georges with the Schwinger boson description of antiferromagnetism of Arovas and Auerbach, enabling the formalism to describe magnetically correlated and magnetically ordered heavy electron phases. One of the interesting aspects of the phase diagram in this theory, is the appearance of a new paramagnetic region in which short-range magnetic correlations grow in response to a pairing of the of the Schwinger bosons. We will discuss the evolution of the specific heat and the quasiparticle effective mass in the approach to the heavy electron quantum critical point, and the fascinating possibility that the critical theory involves the interplay of gapless critical excitations both bosonic and fermionic in character.

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