Quantum Critical Point At Critical Conduction Electron Concentration

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The Quantum Phase Transition (QPT) separates an antiferromagnetic (AFM) metal from a paramagnetic (PM) metal by tuning an effective control parameter as chemical pressure, heat treatment and magnetic field.
Here we show how;The broad unstable dynamical Curie temperature is changed to AFM above which the system behaves PM character by annealing process. Then by doping of conduction electron (c.e) the double FM-AFM percolation due to the competition of the RKKY and Kondo lattice named quantum critical point (QCP) play a big role. The Kondo lattice is formed in the limiting case before the change of unstable crystal structure where the magnetic ordering and Kondo temperature are coincident. This phenomenon stabilized both the crystal and magnetic structure at critical conduction electron contribution (c.e.c) where the system is quenched to superparamagnetic character and the sample susceptibility is independent of the field and shape and the magnetization shows a PM behavior.

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