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Valence fluctuation driven quantum phase transition[1] PRAMOD KUMAR[2], N.S. VIDHYADHIRAJA[3], Jawaharlal Neharu Centre for advanced Scientific Research (JNCASR), Bengaluru — In recent years quantum critical phenomenon have acquired a great interest in the condensed matter community. Many rare earth intermetallic compounds, which are also heavy fermions can be tuned easily to quantum critical point by application of external perturbations like magnetic field and pressure. $YbRh_2Si_2$ and $CeCu_2Si_2$ are a few examples. The periodic Anderson model (PAM) is a paradigm for studying these kind of systems. We investigate the extended periodic anderson model (EPAM), which includes Coulomb interaction of conduction and localised electrons using local moment approach (LMA) within dynamical mean field theory (DMFT) with the objective of developing an understanding of quantum phase transitions due to valence fluctuations. We show that tuning c−f interaction and on-site energy of localised electron (which can be achieved by varying external perturbation like pressure) leads to some exotic phenomena like vanishing of Fermi liquid scale. We study transport properties near quantum critical point and highlight the anomalies due to the proximity of QCP.

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