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Magnetic formfactor and dynamic magnetic susceptibility within DMFT for $\alpha - \gamma$ transition in Cerium and δ- Plutonium BISMAYAN CHAKRABARTI, Rutgers University, MARIA PEZZOLI, None, GIOVANNI SORDI, Royal Holloway, University of London, KRISTJAN HAULE, GABRIEL KOTLIAR, Rutgers University — Using LDA+DMFT we study the magnetic properties of the isostructural volume collapse transition between α and γ Cerium. We compute the magnetic formfactor F(q), and show that it is very close to free ion behavior in both the local moment γ phase as well as the more itinerant α phase, in excellent agreement with neutron scattering experiments. In sharp contrast, the dynamic local magnetic susceptibility $\chi_{loc}(\omega)$ of the two phases is strikingly different. In the γ phase, the spectra is dominated by the sharp low energy peak due to local moment formation,whereas in the α phase we see two broad peaks, the first due to Kondo screening and the second due to Hund's coupling. We also calculate the magnetic spectral function $S(q, \omega)$ where we achieve excellent agreement with experiment. This shows that hybridization plays a central role in the α - γ transition in cerium, and that the 4f electrons are strongly correlated in both phases. We also study the magnetic properties of δ-Plutonium where our results give us important clues about the magnetic excitations of the system.

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