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Theoretical study of the Role of Strength of Hybridization on Specific heat of F-electron Systems

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Abstract. f-electron systems are the compounds based on rare earth and actinide elements having partly filled f-electron orbitals, which below a characteristic low temperature, display very high specific heat coefficient with high effective electronic mass. In the present communication, we report a theoretical study of the role of the strength of hybridization between conduction and f-electrons on specific heat in these systems. We consider periodic Anderson model with Coulomb interaction within mean-field approximation and employ Zubarev's Green's function technique to calculate conduction electron as well as f-electron Green's function. The entropy, electronic specific heat and electronic specific heat coefficient are calculated from the electron free-energy of the f-electron system and are computed numerically.

Keywords. f-electron systems, Entropy and specific heat

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[Full Paper]