Non-Fermi Liquid Behavior on Heavy-Fermion System $Ce_2Pt_6Ga_{15}$

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In recent years, quantum critical phenomena have been attracting many attentions in the area of the strongly correlated electron systems. In the systems of which electronic states are located around the boundary between magnetic and non-magnetic ground states, the temperature dependences of several physical quantities deviate from a Fermi liquid. In many cases such phenomena, namely non-Fermi liquid behaviors can be induced by pressure, magnetic field and changing atomic concentration.
Recently, we have succeeded in synthesizing single crystalline $Ce_2Pt_6Ga_{15}$ which crystalizes in the hexagonal systems (space group $P6_3/mmc$) [1]. We have measured the temperature dependences of the electrical resistivity, magnetic susceptibility and specific heat. The resistivity shows typical features of heavy-fermion systems. The susceptibility obeys the Curie-Weiss law above 50 K. Below 10 K, both the susceptibility and specific heat increase with decreasing temperature showing a -log T dependence indicative a non-Fermi liquid behavior. The observed -log T dependence of the specific heat at low temperatures is distinctive feature of a non-Fermi liquid state mediated by an antiferromagnetic spin fluctuation. The Sommerfeld coefficient reaches about 700 mJ/(Ce-molK^2) at 2 K. These features indicate that the electronic ground state of $Ce_2Pt_6Ga_{15}$ is near the quantum critical point even at ambient pressure.

[1] G. H. Kwei *et al*: Acta Cryst. **B52** (1996) 580.