

The magnetoresistance of ferromagnet CePd_2Ga_3 under high pressure

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It was reported that Kondo compound CePd_2Ga_3 is ferromagnet with $T_C = 6.3$ K at ambient pressure and changes to antiferromagnet at about 2.3 GPa and shows no magnetic ordering at about 5 GPa [1]. But the nature of the ferro-to-antiferromagnetic transition has not been cleared. To investigate this transition, we have measured the magnetic field dependence of the resistivity of CePd_2Ga_3 under high pressure at 0.1 K. We used a diamond-anvil cell as a pressure apparatus and a $^3\text{He}/^4\text{He}$ dilution refrigerator. T_C decreased with pressure. Figure 1 shows the field dependence of the resistivity of CePd_2Ga_3 . The negative magnetoresistance (MR) was observed up to 1.9 GPa and become larger at higher pressure. But MR turned into positive at 2.1 GPa which may correspond to the ferro-to-antiferromagnetic transition. The positive MR was quite large, suggesting an enhancement of magnetic instability. And then, at higher pressure, the MR turned into negative again.

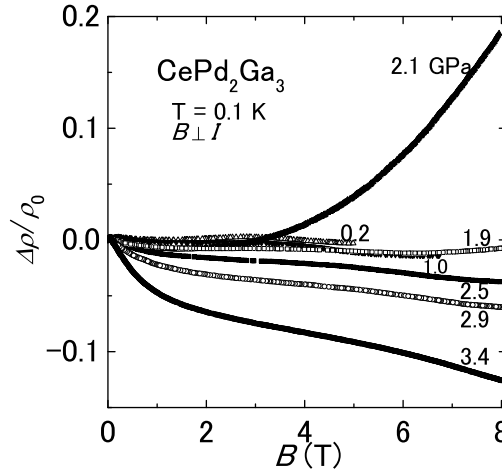


Figure 1: The magnetic field dependence of the resistivity of CePd_2Ga_3 at various pressures at 0.1 K. The vertical axis is the normalized resistivity $\Delta\rho/\rho_0 = [\rho(B) - \rho_0]/\rho_0$.

[1] T. Burghardt *et al.*, J.Phys.: Condens. Matter **17** (2005) 871.