The magnetoresistance of ferromagnet CePd$_2$Ga$_3$ under high pressure

T. Kanemasa$^1$, A. Miyake$^1$, T. Kagayama$^1$, K. Shimizu$^1$, K. Tezuka$^2$ and T. Ebihara$^2$

$^1$KYOKUGEN, Osaka University, Toyonaka, 560-8531
$^2$Dept. of Phys, Shizuoka Univ., Shizuoka 422-8529, Japan

It was reported that Kondo compound CePd$_2$Ga$_3$ 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$_2$Ga$_3$ under high pressure at 0.1 K. We used a diamond-anvil cell as a pressure apparatus and a $^3$He/$^4$He dilution refrigerator. $T_C$ decreased with pressure. Figure 1 shows the field dependence of the resistivity of CePd$_2$Ga$_3$. 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$_2$Ga$_3$ at various pressures at 0.1 K. The vertical axis is the normalized resistivity $\Delta \rho/\rho_0 = [\rho(B)-\rho_0]/\rho_0$.](image)