(P1-28)

5*f* electronic state of the transuranium compound $NpIn_3$

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We succeeded in growing a high-quality single crystal of $NpIn_3$ by the In-flux method, and measured the electrical resistivity, specific heat, magnetic susceptibility, magnetization and de Haas-van Alphen (dHvA) effect. Ferromagnetic and antiferromagnetic orderings occur at $T_C = 14\,K$ and $T_N = 10\,K$, respectively, together with another transition at $T^* = 8\,K$. When the magnetic field is applied to the sample, the antiferromagnetic state is finally changed into a ferromagnetic state with two metamagnetic transitions. The antiferromagnetic ordering and two metamagnetic transitions are found to be of the first-order phase transition. In the dHvA experiments, we observed three dHvA branches with the cyclotron mass ranging from 3.4 to $14\,m_0$. These dHvA branches are discussed from a viewpoint of the $5f$-localized model based on the Fermi surface of $LaIn_3$.

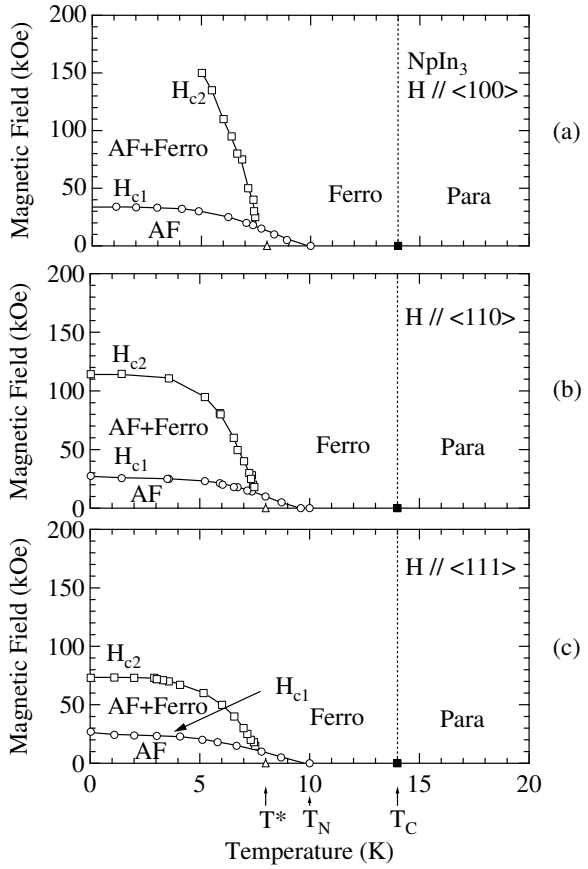

Figure 1: Magnetic phase diagram of $NpIn_3$.

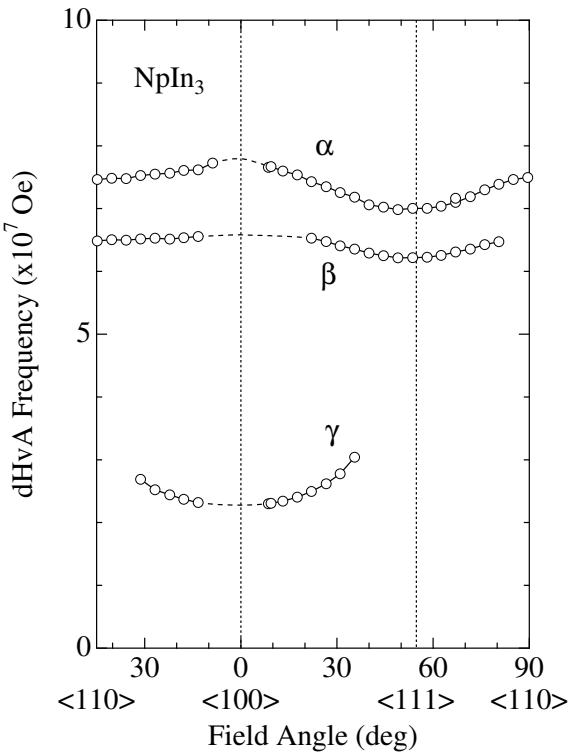

Figure 2: Angular dependence of the dHvA frequency in the ferromagnetic state of $NpIn_3$.