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Hall effect in NdB_6 JOLANTA STANKIEWICZ, ICMA, CSIC-Universidad de Zaragoza, ZACHARY FISK, Department of Physics, University of California at Davis — We report results of electrical resistivity, Hall effect and magnetization measurements in a NdB_6 single crystal, in a temperature range from 2 to 300 K and in magnetic fields of up to 7 T. We took care to use low magnetic fields ($H_{appl} < 1$ T) in our Hall effect experiments in order to avoid magnetic field smearing out anomalies at the critical points. The Hall resistivity ρ_H, which is electronlike, shows a maximum at $T \simeq T_N$. In the paramagnetic (PM) region, we find a linear dependence of ρ_H/H_{appl} on effective susceptibility. This enables us to separate two contributions to the Hall effect, an ordinary and an anomalous one. The estimated anomalous Hall coefficient R_s (holelike) is much larger than the ordinary one in the PM state and is independent of temperature. As the antiferromagnetic (AF) order sets in below ~ 8 K, R_s decreases sharply with decreasing temperature. In the AF state, $R_s \propto \rho$, where ρ is the total resistivity. We do not find any significant variations of the anomalous Hall coefficient near the critical point. Both magnetization and Hall voltage show an amomaly in low magnetic fields, which may be related to domain rotations.

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