

Supplementary Material

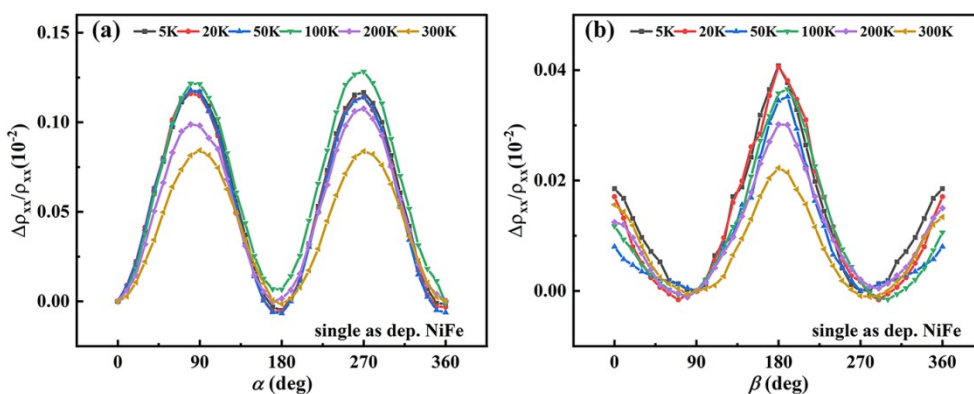


Fig. S1 $\Delta\rho_{xx}/\rho_{xx}$ measured in (a) α , (b) β sweeps at different temperatures from 300K to 5K at a constant magnetic field of 2T for as dep. $\text{Ni}_{80}\text{Fe}_{20}$ single-layer samples, respectively.

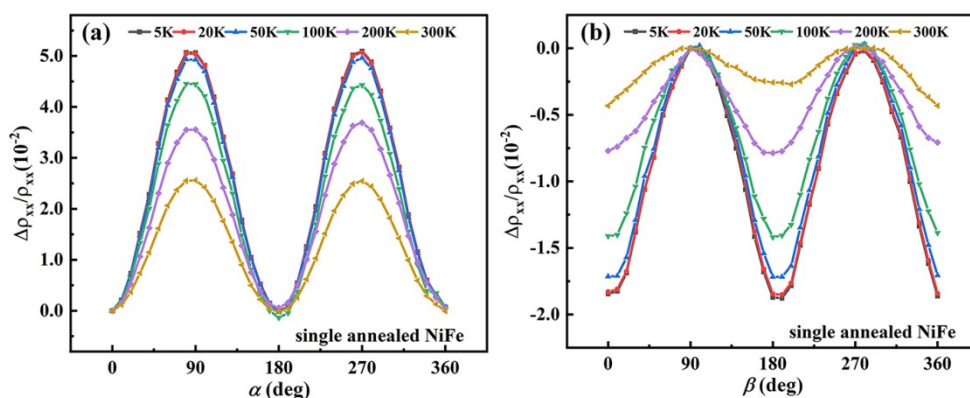


Fig. S2 $\Delta\rho_{xx}/\rho_{xx}$ measured in (a) α , (b) β sweeps at different temperatures from 300K to 5K at a constant magnetic field of 2T for annealed $\text{Ni}_{80}\text{Fe}_{20}$ single-layer samples, respectively.

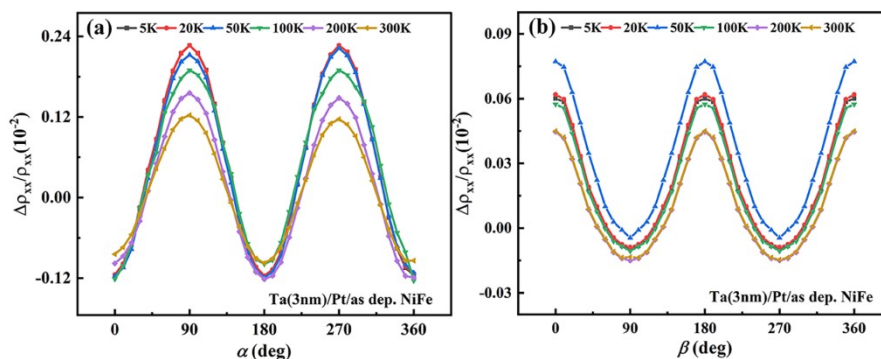


Fig. S3 $\Delta\rho_{xx}/\rho_{xx}$ measured in (a) α , (b) β sweeps at different temperatures from 300K to 5K at a constant magnetic field of 2T for Ta (3nm)/Pt(3nm)/as dep. $\text{Ni}_{80}\text{Fe}_{20}$ samples.