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Planar Hall Effect in amorphous ribbons of $\text{Co}_{75}\text{Fe}_5\text{Si}_{15}\text{B}_{10}$

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Abstract

The Planar Hall Effect was investigated in as-quenched amorphous ribbons as a function of the frequency and amplitude of the AC electrical current and the amplitude of a DC current. The melt-spinning was used to produce the amorphous $\text{Co}_{70}\text{Fe}_5\text{Si}_{15}\text{B}_{10}$ alloy characterized by a high-magnetic permeability. In low frequencies, the H -dependence of the Hall voltage is similar to those measured using DC currents. However, the Hall effect develops spectra formed by two strongly f -depending peaks symmetrical and centered around $\pm 1,6$ kOe as increased the frequency. An anomaly in the Hall voltage was identified as mainly due to a Planar Hall Effect. The effect was measured also with a DC current (I_{dc}) applied simultaneously with the AC current. The asymmetric peaks are dependent on the magnitude and direction of the DC electrical current and of the applied magnetic field.