Optimizing the Sensing Properties of Race-Track Fluxgates as a Function of Core Layers

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Abstract. In this study, we suggest an alternative design of the fluxgate sensors at race-track geometry. We have investigated the influence of the number of core layers on the sensor performance by making sensitivity and noise measurements. With this purpose, we have prepared four sensors which all have the same characteristics but consist of one, two, three and five layers of the magnetic ribbons. After finding the optimal number of core layers, optimization works were carried out on that sensor. We have finally achieved to get a sensitivity of ~166 kV/T and a noise level of 18 pT/√Hz@1Hz respectively.