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wire micro-magnetic sensor for OSI magnetic field mapping

Magnetic field mapping, as one of the continued period technologies, plays a vital role for on-site inspection. Looking back into the recent science and technology development history, magnetic sensing has been under decades of development. This work would propose a high performance magnetic sensor based on the giant magnetoimpedance effect of special magnetic materials (i.e., the impedance of material changes significantly with a small change in the external magnetic field). Compared with current magnetic sensors such as GMR magnetic resistance sensors, flux metres and Hall sensors, a theorphous wire magnetic sensor has comprehensive technical advantages such as high response speed (up to MHz), high sensitivity ($>1000\text{mv/Gs}$), high resolution (up to 0.05nT), wide measurement range (up to $\pm 3\text{Gs}$), low power consumption (10mW), and small size ($1\text{-}2\text{ mm}$). A prototype UAV based magnetic field mapping equipment has been developed. Field experiments have been carried out to demonstrate its potential application to the on-site inspections of CTBT.

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