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[Abstract]

3D Geophysical Vector Magnetometer: Installation and Calibration

Boyan Benev¹, Vergil Yotov², Tsvetan Tsvetkov³, Nikola Petrov⁴

¹Institute of Astronomy and National Astronomical Observatory, Bulgarian Academy of Sciences. 72 Tsarigradsko Chaussee Blvd., 1784 Sofia, Bulgaria. ORCID number: 0000-0003-0773-486X

²Institute of Astronomy and National Astronomical Observatory, Bulgarian Academy of Sciences, address: 72 Tsarigradsko Chaussee Blvd., 1784 Sofia, ORCID 0009-0003-6349-2057

³Institute of Astronomy and National Astronomical Observatory, Bulgarian Academy of Sciences, address: 72 Tsarigradsko Chaussee Blvd., 1784 Sofia, ORCID 0000-0002-5838-5244

⁴Institute of Astronomy and National Astronomical Observatory, Bulgarian Academy of Sciences, address: 72 Tsarigradsko Chaussee Blvd., 1784 Sofia, ORCID 0000-0002-2443-2815

*Correspondence: bgbenev@nao-rozhen.org

Abstract: In this work, we present a newly established three-axial magnetoresistive vector magnetometer for monitoring the Earth's magnetic field. The magnetometer is designed and developed by a team from the Institute of Astronomy and National Astronomical Observatory at the Bulgarian Academy of Sciences. This instrument provides the possibility of continuous monitoring and study of short-term changes (seconds) in the Earth's magnetic field. A dynamic database with open access is organized. This provides an additional opportunity for research and analysis of long-term geomagnetic dynamic processes related to various phenomena, solar activity, and space weather. The magnetometer shows a measurement accuracy of less than 1nT on every axis in combination with automatic internal

temperature stabilization of the sensor triad and most sensitive electronic components. Temperature accuracy is 0.003°C at sampling rate of one data measurement per second.

Keywords: Magnetometer; Geomagnetic Field; Magnetoresistance; Space Weather;

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