Comparison of magnetic field measurement techniques on Earth, Mars, Mercury and comet P/ Wirtanen

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A b s t r a c t: Missions to the Planets Mars and Mercury and to Comet Wirtanen are scheduled in the next few years. Orbiter and lander modules will investigate surface composition, internal structure as well as magnetospheric phenomena. In this paper the scientific objectives of magnetic field experiments will be briefly presented and consequences from magnetic and environmental conditions for the instrument design will be derived. A vector compensated ring core fluxgate sensor with near sensor digitalisation will be proposed as core hardware for all applications. The instrument is fitted to the different environmental conditions only by the special choice of software, interface and the specific design of the feedback coil system.

Key words: magnetometer, space exploration, fluxgate sensor

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