

ELECTRON AND ION SPECTROMETER (EIS) ONBOARD THE NOZOMI SPACECRAFT

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Nozomi was launched on July 4, 1998 as a Japanese first mission to the planet Mars. The main objective of this mission is to investigate the interaction between Martian atmosphere and the solar wind. The electron and ion spectrometer (EIS) is one of the fourteen instruments onboard the Nozomi spacecraft. The main targets of the EIS measurements are to investigate (a) ion pick-up processes, (b) particle acceleration at the bow shock, (c) ion escape from the Mars and (d) transport and energization of solar particles. Moreover during the cruise phase the EIS monitors energetic particles to investigate (e) Coronal Mass Ejections (CMEs) in interplanetary space and (f) particles from Corotating Interaction Region (CIR). EIS is designed to measure the fluxes of electrons, protons and heavy ions in the energy range from ~ 40 keV to a few MeV. It is a compact sensor of which the weight is 1.1 kg and the size is $80 \times 155 \times 207$ mm³. It consists of two kinds of telescopes based on the TOF \times E method (a TOF-E telescope) and on the $\Delta E \times E$ method (two ΔE -E telescopes). The ΔE -E telescopes are used to measure electrons and protons, while the TOF-E telescope is mainly used to measure He, CNO-group, NeMgSi-group, and Fe-group. In this paper, the scientific objectives of this experiment and the details of the instrument are shown.