



Contribution ID : 768

Type : Oral

Time-of-Flight Detector System of the IBEX-lo Sensor with Low Background Performance for Heliospheric ENA Detection

Tuesday, 10 July 2007 11:42 (0:12)

Abstract content

IBEX-lo on the Interstellar Boundary Explorer (IBEX) will image energetic neutral H atoms (ENA) from the termination shock at 10 – 2000 eV and the flow distribution of interstellar O in spring and fall. The sensor combines a mechanical collimator to restrict the detectable arrival directions, an atom to negative ion conversion surface, an electrostatic analyzer, post-acceleration up to 20 keV, and time-of-flight (TOF) analysis, providing species separation and effective background suppression. Because the flux of the heliospheric ENAs is very low a triple coincidence system is used with secondary electrons produced at two consecutive carbon foils, followed by detection of the ions in a micro-channelplate. These signals are combined into three independent TOF measurements. Meanwhile the flight model of the TOF subsystem has been fabricated, tested and calibrated. It will be shown how the combination of several TOF measurements is very effective to suppress background to unprecedented levels and to identify minor species, whose fluxes are several orders of magnitude below the main species. Results from the testing of both the engineering and the flight unit will be discussed in the light of the IBEX science objectives to study the termination shock and the heliosheath.

If this papers is presented for a collaboration, please specify the collaboration

Summary

Reference

Proceedings of the 30th International Cosmic Ray Conference; Rogelio Caballero, Juan Carlos D'Olive, Gustavo Medina-Tanco, Lukas Nellen, Federico A. Sánchez, José F. Valdés-Galicia (eds.); Universidad Nacional Autónoma de México, Mexico City, Mexico, 2008; Vol. 1 (SH), pages 841-844

Primary author(s) : Prof. MOEBIUS, Eberhard (University of New Hampshire)

Co-author(s) : Dr. KUCHARÉK, Harald (University of New Hampshire); Dr. SAUL, Lukas (University of Bern); Dr. SCHEER, Jürgen (University of Bern); Prof. WURZ, Peter (University of Bern); Dr. WIESER, Martin (Swedish Institute of Space Physics); GRANOFF, Mark (University of New Hampshire); Mr. KING, Brian (University of New Hampshire); Mr. LONGWORTH, Steve (University

of New Hampshire); Dr. FUSELIER, Stephen (Lockheed Martin Advanced Technology Center); Mr. HERTZBERG, Eric (Lockheed Martin Advanced Technology Center); Dr. LIVI, Stefano (Soujthwest Research Institute); Dr. PASCHALIDIS, Nick (Applied Physics Laboratory); Mr. SCHLEMM, Chuck (Applied Physics Laboratory)

Presenter(s) : Prof. MOEBIUS, Eberhard (University of New Hampshire)

Session Classification : SH 3.5,SH 5.1, SH 5.2

Track Classification : SH.5.2