Abstract Submitted
for the 4CF10 Meeting of
The American Physical Society

Structures and Spectra at the Interface of the Heliosphere and Interstellar Medium: Energetic Neutral Atom (ENA) Sky Maps from the Interstellar Boundary Explorer HERBERT FUNSTEN, Los Alamos National Laboratory, FREDERIC ALLEGRINI, Southwest Research Institute, GEOFF CREW, Massachusetts Institute of Technology, ROBERT DEMAJISTRE, Applied Physics Laboratory, Johns Hopkins University, PRISCILLA FRISCH, University of Chicago, STEPHEN FUSELIER, Lockheed Martin Advanced Technology Center, MICHAEL GRUNTMAN, University of Southern California, PAUL JANZEN, University of Montana, DAVID MCCOMAS, Southwest Research Institute, EBERHARD MOEBIUS, University of New Hampshire, DANIEL REISENFELD, University of Montana, EDMOND ROELOF, Applied Physics Laboratory, Johns Hopkins University, NATHAN SCHWADRON, University of New Hampshire, IBEX TEAM — The Interstellar Boundary Explorer (IBEX) has obtained all-sky images of energetic neutral atoms (ENAs) emitted from the heliosheath, located between the termination shock of the solar wind and the local interstellar medium (LISM). The spectral variations over the energy range 0.3-6 keV in the ENA all-sky maps reveal an unexpected new picture of the outer boundary of the heliosphere, including the discovery of a circular ribbon of enhanced ENA emission, spectral features suggesting global ordering by heliospheric latitude, and a dominant role played by the non-thermal proton populations. The IBEX spectral measurements enable unprecedented insight into the underlying structure and dynamics of the heliosheath.

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Date submitted: 30 Sep 2010 Electronic form version 1.4