



The Global Heliosphere Revealed by Observations from the Interstellar Boundary Explorer - IBEX

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Global images of the heliosphere's interaction with the local interstellar medium have recently been published using observations from the Interstellar Boundary Explorer (IBEX) mission [McComas et al., Science, 326, 5955, 2009 and related articles in the same issue]. IBEX observes energetic neutral atoms (ENAs) over the energy range from ~ 100 eV – 6 keV, emanating in from the interaction region at the edge of the heliosphere. In IBEX's first sky maps, we discovered a narrow, bright ribbon of ENA emissions unpredicted by any prior models or theories that appears to be ordered by the interaction of the heliosphere with the local interstellar magnetic field. This ribbon is superposed on more slowly spatially varying globally distributed ENA flux, which is ordered by both the solar wind structure and the direction of motion through the interstellar medium. IBEX observations indicate that the external galactic environment strongly imprints the heliosphere. This talk summarizes the published IBEX observations, examines the possibility that the ribbon structure may be evolving over the six months between IBEX's first and second sky maps, and discusses some of the possible ideas for what may be missing in our current understanding of the heliosphere's global interaction and creating this remarkable ribbon structure.