EP 12 Heliosphäre: Fernerkundung

Zeit: Mittwoch 14:00–14:45 Raum: B

Hauptvortrag EP 12.1 Mi 14:00 B

The IBEX mission: Seeing the world through energetic neutral particles — •Hans Joerg Dr.Fahr — Institut fuer Astrophysik der Universitaet Bonn, Auf dem Huegel 71, 53121 Bonn

The NASA spacecraft VOYAGER-1/2 perhaps will cross over the solar wind termination (ST) shock in the nearest future, but even when this happens, the possibilities to study this global plasma feature of the outer heliosphere are only of stigmatic and singular value. The global and time-dependent configuration of structures like the TS shock, the heliopause and the outer bowshock may nevertheless become a hot subject of thorough investigations already in the coming years thanks to new observational techniques developed for the new NASA SMEX satellite mission IBEX (Interstellar Background Explorer). This satellite will be launched in August 2007 and will measure spectral fluxes of energetic neutral particles (ENA's) over a wide range of energies from nearly all directions of the sky. In this talk it will be demonstrated how by monitoring of allsky spectral ENA fluxes from the outer heliosphere questions about the nature of the TS shock, the heliosheath magnetic field, pick-up ion injection into anomalous cosmic ray particles and the outer bowshock can be answered.

Fachvortrag EP 12.2 Mi 14:30 B

ALL-SKY ENA FLUX MAPS FOR IBEX FROM 3D MODELLING — •Oliver Sternal[1], Klaus Scherer[1], Horst Fichtner[1], and Hans Fahr[2] — [1]Institut für theoretische Physik IV, Ruhr-Universität Bochum — [2]Institut für Astrophysik und extraterrestrische Forschung, Universität Bonn

The Interstellar Boundary Explorer (IBEX) will measure energetic neutral atoms (ENAs), which are mainly produced by charge exchange processes between protons and interstellar hydrogen in the inner heliosheath. On the basis of a 3D model of the heliosphere (Bochum code), we have extended the 2D computations with the Bonn model to derive all-sky ENA flux maps. According to these studies, there are at least three seed populations that contribute significantly to the total ENA flux in the energy range to be observed by IBEX, namely the shocked, i.e. heated, solar wind protons and the pick-up ions (PUIs) upstream and downstream of the termination shock. While the solar wind contribution can be directly obtained from the Bochum code, that due to the PUIs can be approximated. The resulting all-sky ENA flux maps enable us to study their sensitivity to different structures of the heliospheric interface and to compare them with forthcoming IBEX maps.