

# **Heliospheric energetic neutral atoms observed with SOHO/CELIAS/HSTOF**

M. Hilchenbach (1), A. Czechowski (2), K.C. Hsieh (3) and R. Kallenbach (4)

(1) Max-Planck-Institute for Solar System Research, Max-Planck-Str. 2, D-37189 Katlenburg-Lindau, Germany, (2) Space Research Center, Polish Academy of Sciences, Bartycka 18A, PL-00716, Warsaw, Poland, (3) Department of Physics, University of Arizona, Tucson, AZ 85721, USA, (4) International Space Science Institute, Hallerstrasse 6, CH-3012 Bern, Switzerland

Energetic hydrogen and helium atoms (ENAs) have been identified and their fluxes are monitored by the High-Energy Suprathermal Time-of-Flight sensor (HSTOF) of the Charge, Element, and Isotope Analysis System (CELIAS) on the Solar and Heliospheric Observatory (SOHO) near the Lagrangian point L1. Potential sources of ENAs in the heliosphere are CIRs, solar energetic particle events, pre-accelerated pickup ions as well as low-energy (up to few hundred keV) anomalous cosmic ray (ACR) ions in the outer heliosphere, close to and beyond the solar wind termination shock. ENAs, neutralized via charge transfer reactions, can penetrate into the inner solar system, unaffected by the interplanetary magnetic field. The observed ENA fluxes set limits on potential theories of the dominant sources of the energetic neutral atoms and has implications on modeling of the heliosphere.