



The Martian hydrogen exospheric density profile measured with ASPERA-3/NPD

P. Wurz (1), A. Galli (1), H. Lammer (2), H.I.M. Lichtenegger (2), R. Lundin (3), S. Barabash (3), A. Grigoriev (3), M. Holmström (3), A. Fedorov (4) and the ASPERA-3 team

(1) University of Bern, Physikalisches Institut, CH-3012 Bern, Switzerland (peter.wurz@soho.unibe.ch), (2) Space Research Institute, Austrian Academy of Sciences, Schmiedlstrasse 6, A-8042 Graz, Austria, (3) Swedish Institute of Space Physics, Box 812, SE-981 28 Kiruna, Sweden, (4) Centre d'Etude Spatiale des Rayonnements, BP-4346, F-31028 Toulouse, France

The NPD sensor on the Mars Express spacecraft has a small susceptibility to UV light for wavelengths below 160 nm. During the analysis of energetic neutral atoms of possible interstellar origin, this UV susceptibility has been calibrated to remove this background from the data. Since the Martian UV emission below 160 nm is almost entirely due to Lyman- α radiation this UV background can be used to infer the hydrogen column density inside the NPD field-of-view. On 25 April 2004 there was a favourable observation condition for NPD for such an investigation. From 12:00 UT to 13:10 UT the NPD field-of-view scanned the area close to the Martian limb. The recorded data were interpreted with the help of a Monte-Carlo model of exospheric density profiles. The exospheric hydrogen density is $(6.0 \pm 1.0) \cdot 10^9 \text{ m}^{-3}$ and the temperature is about 1000 K. Comparisons with earlier data from the Mariner 6 and Mariner 7 missions will be presented.