



Phobos – solar wind interaction: Results from Mars Express for the closest-ever fly-by

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On December 29, 07:09 UT Mars Express performed a Phobos fly-by at a distance of 58 km from the center of Phobos. This is the closest fly-by ever performed by a spacecraft at this Martian moon. The fly-by occurred on the Phobos day side (upstream), in the Martian magnetosheath, close to the induced magnetosphere boundary down-tail. The ASPERA-3 package (Analyzer of Space Plasmas and Energetic Atoms) was searching for any Phobos related disturbances in the ambient plasma. To improve the package performance the ion sensor was re-programmed to achieve a time resolution of 24 s for a full energy – angular sweep, instead of the usual 192 s. The electron sensor operated with the nominal 4 s time resolution. At the time of the abstract submission the data analysis is on-going. No strong signatures unambiguously caused by Phobos have been so far identified in the proton measurements. Neither is seen the presence of any heavy ions. The preliminary results rule out strong outgassing from Phobos. Phobos very likely interacts with the solar wind in the manner similar to the Moon. Phobos regolith absorbs the majority of the impinging solar wind ions and a small fraction of protons get reflected.