

MEX-ASPERA-3 Observations: Mass Separation of Planetary Ions extracting from the Martian ionosphere

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A giant velocity filtering of extracting ionosphere/atmosphere ions at Mars is found by the ASPERA-3 observations onboard Mars Express. The ions of the planetary origin with different ratios m/q (m and q are mass and charge, respectively) moving in the crossed electric and magnetic fields form a layered structure in which ions with large m/q (O^+ ions) are placed on the top layer while molecular hydrogen and Helium ions occur on the bottom. Evaluation of extraction electric field is made. A comparison of the data with the simulation results is also made.