



Mass-loading, pile-up, and mirror-mode waves at comet 67P/Churyumov-Gerasimenko

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The data from all Rosetta Plasma Consortium instruments and from the ROSINA COPS instrument are used to study the interaction of the solar wind with the outgassing cometary nucleus of 67P/Churyumov-Gerasimenko. During 6 and 7 June 2015, the interaction was first dominated by an increase in the solar wind dynamic pressure, caused by a higher solar wind ion density. This pressure compressed the draped magnetic field around the comet, and the increase in solar wind electrons enhanced the ionization of the outflow gas through collisional ionization. The new ions are picked up by the solar wind magnetic field, and create a ring/ring-beam distribution, which, in a high- β plasma, is unstable for mirror mode wave generation. Two different kinds of mirror modes are observed: one of small size generated by locally ionized water and one of large size generated by ionization and pick-up farther away from the comet.