

R009-05

Zoom meeting D : 11/1 AM1 (9:00-10:30)

10:00~10:15

Possibility of water-ion parallel acceleration in the comet 67P/Churyumov ? Gerasimenko: observation by the Rosetta spacecraft

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Acceleration of the comet-origin water ions is considered mainly by the bipolar electric field and by the solar wind electric field perpendicular to the magnetic field. The ESA/Rosetta observations of the comet 67P/Churyumov-Gerasimenko over two years revealed that the acceleration of these water ions is more complicated than previously thought. Rosetta Plasma Consortium's Ion Composition Analyzer (RPC/ICA) detected comet-origin water ions that are accelerated to >100 eV [1]. The majority of them are ordinary pick-up acceleration during low comet activity [2,3]. During the high comet activity near the perihelion when a comet magnetosphere is formed where solar winds cannot reach and solar wind electric field is strongly deformed.

When the Rosetta is located inside the magnetosphere but marginal location, we sometimes observed water-ion acceleration to >1 keV and some of them are flowing along the magnetic field [4]. In this meeting, we show one of these observations and discuss possible acceleration scenarios.

References

- [1] H. Nilsson et al., Space Sci. Rev., 128, 671 (2007), DOI: 10.1007/s11214-006-9031-z
- [2] H. Nilsson et al., MNRAS 469, 252 (2017), doi:10.1093/mnras/stx1491
- [3] G. Nicolau et al., MNRAS 469, 339 (2017), doi:10.1093/mnras/stx1621
- [4] T. Kotani et al., EPSC, EPSC2020-576 (2020), <https://doi.org/10.5194/epsc2020-576>