

# Plasma density and magnetic field fluctuations in the ion gyro-frequency range near the diamagnetic cavity of comet 67P

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## Abstract

We report the detection of large-amplitude, quasi-harmonic density-fluctuations with associated magnetic field oscillations in the region surrounding the diamagnetic cavity of comet 67P. Typical frequencies are  $\sim 0.1$  Hz, corresponding to  $\sim 10$  times the water and  $\lesssim 0.5$  times the proton gyro-frequencies, respectively. Magnetic field oscillations are not always clearly observed in association to these density fluctuations, but when they are, they consistently have wave vectors perpendicular to the background magnetic field, with the principal axis of polarization close to field-aligned and with a  $\sim 90^\circ$  phase lag w.r.t. the density fluctuations. The fluctuations are observed in association with asymmetric plasma and magnetic field enhancements previously found in the region surrounding the diamagnetic cavity, occurring predominantly on their descending slopes. We speculate that they are Ion Bernstein waves (IBWs) excited by the drift-cyclotron instability resulting from strong plasma inhomogeneities in the region surrounding the diamagnetic cavity.

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