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Ion time scale dispersion relations and fluctuations at comets

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The Rosetta spacecraft has been accompanying comet 67P/Churyumov-Gerasimenko since 2014. As the comet approached the sun, the outgassing rate increased, and the thus created neutral atmosphere started to interact with the solar wind. The Rosetta Plasma Consortium (RPC) ion instruments have observed these interaction processes at this low activity comet. These observations include deflection of solar wind protons and alpha particles; singly charged helium ions being produced in charge exchange collisions between solar wind alpha particles and cometary neutrals; and water ions of cometary origin that have been accelerated by the solar wind electric field. These populations combine to form an ion distribution function. We use the RPC Ion Composition Analyser (RPC-ICA) to measure that distribution function, which we then analyse for fluctuations and dispersion relations on the ion time scale.