

## **In-situ charged nanograins and energetic particles from comet 67P/Churyumov-Gerasimenko as seen by Rosetta IES on 07 June 2016**

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On 07 June 2016, the Rosetta Ion and Electron Sensor (IES) instrument observed both negatively and positively charged particles approximately 28 km away from comet 67P/Churyumov-Gerasimenko. The energy-time spectrograms for negative particles from the IES electron analyzer indicate negative ions and charged nanograin are observed. A cometary outburst would support the highly localized and temporal nature of the negative particle signatures with energies above a few hundred eV. For the positive particles, the IES observes another ion with energy per charge between that of H<sup>+</sup> and He<sup>++</sup> signatures. Concurrently, the total neutral density is also observed during this time interval. We will investigate possible ion-neutral interactions to identify the unknown ion species observed by IES.