

Dynamical properties of the cometary dust grains in the 67P/Churyumov-Gerasimenko coma constrained by the GIADA measurements

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On the 6th of September 2016, a few weeks before Rosetta landing on comet 67P/Churyumov- Gerasimenko, was the last outburst detected by in-situ dust instrument GIADA (Grain Impact Analyzer and Dust Accumulator) onboard Rosetta. GIADA measures the speed, momentum and optical cross section of individual particles detected in situ, deriving their mass and geometrical cross- section. In addition one of its subsystem, the Micro-Balances System (MBS), gives the cumulative deposited dust. Some of these measurements, performed at close distance (?5km), opened a room for studying the dynamical properties of the particles moving in such specific cometary active events providing information on the dust motion of grains from few microns up to hundred microns in size. Here we are focused on simulating the motion of compact dust particles (i.e. bulk density more than 800 kg/m³) considering gas environment constrained by the available Rosetta data. Using aspherical dust model we computed the dispersion in the trajectories of particles from the dominant radial outburst direction. We obtained deviation of a few meters of the dust particles on depend on their aspherical shape. The model used ellipsoidal shapes of different aspect ratios constrained by observational data acquired before 67P/C-G perihelion.
