

Determination of Dust Particle Masses using Rosetta OSIRIS NAC and WAC Data

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Abstract

The ESA spacecraft Rosetta has been tracking its target, the Jupiter-family comet 67P/Churyumov-Gerasimenko, in close vicinity for over one year. In some dedicated imaging sequences, the two OSIRIS cameras onboard Rosetta, the NAC (Narrow Angle Camera) and the WAC (Wide Angle Camera), took images at the same time.

The aim of this work is to use these double camera data to calculate the dust particles' mass in the coma of the comet. For that, the distance to camera of the same particle which was found on the NAC images and on a WAC image has to be determined. In the simultaneously taken data, some particles show a shift between the trails seen by NAC and by WAC. With this parallax and the distance between the cameras, the distance to the cameras can be computed. Together with the brightness and movement of the particle, the data yield its mass. For this purpose almost 75 double camera images were investigated. This work presents first results of the ongoing work.