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The large particle component of the dust from comet 67P/Churyumov-Gerasimenko

J. Agarwal (1), M. Müller (2), H. Böhnhardt (3), W.T. Reach (4), M.V. Sykes (5), D.J. Lien (5), E. Grün (1)

(1) MPI for Nuclear Physics, Heidelberg, (2) MPI for Solar System Research, Katlenburg-Lindau, (3) ESA/ESOC, Darmstadt, (4) IPAC/SSC/Caltech, Pasadena, (5) Planetary Science Institute, Tucson

We have analysed images of the dust trail and antitail of Rosetta target comet 67P/Churyumov-Gerasimenko obtained with the Wide Field Imager at the ESO/MPG 2.2m-telescope on La Silla and with the MIPS instrument (24 micron) on board the Spitzer Space Telescope of NASA. By comparison with images simulated using a generalised Finson-Probstein approach, we constrain the size distribution of particles larger than about 100 μ m emitted by 67P/Churyumov-Gerasimenko. Such particles carry the better part of the refractory mass released from the comet to interplanetary space, and they may constitute a hazard to the Rosetta spacecraft, scheduled to reach the comet in 2014. We find that both the size distribution of these large particles and the dependence of the dust production rate on heliocentric distance are those of a fairly typical comet.