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Analysing the Post Deep Impact Brightness Distribution of the Cometary Dust of the Comet 9P/Tempel 1 with OSIRIS

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OSIRIS (Optical, Spectroscopic, and Infrared Remote Imaging System) is the main scientific imaging system on the orbiter of the European Space Agency's's Rosetta mission to comet 67P/ Churymov-Gerasimenko. Within the framework of our observing campaign of the comet 9P/Tempel 1 during the time of NASA's Deep Impact mission, carried out with OSIRIS, we report here an analysis of the post-impact light curves of the cometary dust in the Orange (648 nm), and in the Near Infrared (882 nm) broad-band filters for several apertures of different radii. By using a simple model of the dust ejecta plume for different velocities, we interpret the brightness distribution on the successive 250 hours following the impact. This analysis provides useful insights into the ejected material velocities, the changing total cross section of particles released into the coma, and furthermore, a more thoroughly understanding of the characterization of the impact physical process.