

Colours, spectral slopes and phase curves of 67P/C.G.'s nucleus as observed by Rosetta/OSIRIS

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During the 26 months the Rosetta probe followed the nucleus of comet 67P/Churyumov-Gerasimenko, the OSIRIS instrument surveyed extensively its surface at different spatial resolutions and under multiple phase angles. This allowed to characterize the overall surface of the nucleus. Furthermore the three flybys manoeuvres, that the spacecraft accomplished respectively in August 2014, February 2015 and April 2016 [7, 5, 9], most notably allowed to characterize the nucleus' surface at high resolution.

While the first flyby manoeuvre was performed at an altitude of ~ 300 km, thus allowing the OSIRIS instrument to map most of the nucleus' surface, the other flybys, performed at ~ 10 and ~ 30 km over the big lobe of the comet and around the frontiers of the Imhotep depression, have permitted the OSIRIS instrument to study with a sub-meter resolution the spectrophotometric and photometric properties of the transition areas between different morphological units [3, 4].

The extensive amount of OSIRIS observations collected during those 26 months have also allowed to investigate the presence and resilience of areas locally enriched in water-ice material [11, 1, 2, 6, 10], as well as the evolution of the superficial layers' composition in between seasons and during sunrise [8].

We will summarize the findings of the OSIRIS composition team regarding the global spectrophotometric and photometric properties of the nucleus, as well as present the results of the photometric analysis of the April 2016 flyby observations and compare them with those obtained during the previous flybys.

References

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