

Implications of the stratified inner structure of comet 67P on cometary formation

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Since the Rosetta orbiter was successfully inserted into the orbit of the bi-lobate comet 67P/Churyumov-Gerasimenko on August 2014, many images of the comet nucleus were taken by the onboard OSIRIS camera system, providing evidences of geomorphological features unequivocally related to layered materials. Indeed a continuous and pervasive onion-like layering of each lobe of the nucleus has been proposed to explain the morphological terraces, linear features and persistent scarps observed on 67P (Massironi et al. 2015, Nature). Such a geometry has been constrained through a three dimensional implicit modelling based on measurements of terraces orientations (Penasa et al., submitted MNRAS). In particular, multiple layers, roughly shaped as ellipsoids, define different and independent wrapping sequences of the two lobes of 67P. This geometrical model together with the evidences of stratification even in high resolution images encourage to discuss the implications that the layering structure has in terms of cometary formation. We will thus review the latest results on comet 67P layering showing how possible geological configurations of the discontinuities can help in constraining different formation scenarios.
