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## Density fine structuring of the solar corona inferred from the trail of sungrazing comets and Metis observations

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Comet C/2011 N3 (SOHO) and Comet C/2011 W3 (Lovejoy) are, up to the present, the only two comets observed to have transited inside the inner solar corona at distances below two solar radii. The observations captured by the Solar Dynamics Observatory in EUV with the Atmospheric Imaging Assembly have revealed the comet tails structured as a sequence of striations, apparently distributed quasi-periodically in space. Such striations, even known as “striae”, are represented by a beam of oxygen ions released by the comet nucleus that diffuses along the local magnetic field.

However, it is still unclear if the sequence of striae reflects the hidden structuring of the solar corona or is merely caused by an internal process in the comet (e.g., a rapid rotation of the comet nucleus causing a periodic injection of the oxygen ions).

We present a preliminary analysis of the striations formed after the passage of the comets by quantifying length, width, and number of striae per unit of length as a function of the altitude from the solar surface. The apparent transverse motion of the striae presents relevant consequences in the context of coronal seismology. Furthermore, we also relate our findings to the recent high-resolution observations from the SolO-Metis coronagraph.

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