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Probing the solar corona magnetic field with sungrazing comets

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Space telescopes of the SoHO, STEREO and SDO missions have occasionally acquired observations of comets, providing an interesting opportunity to investigate the structure and dynamics of the heliospheric plasma. Cometary plasma tails exhibit a wave-like motion, which is believed to be a response to the physical conditions of the local interplanetary medium. Furthermore, sungrazing comets diving in the solar atmosphere provide us with an unprecedented way to diagnose the coronal plasma at distances which are unaccessible from the current spacecraft. Here, we present observations of Comet Lovejoy C/2011 W3 from SDO/AIA, which was seen to cross the EUV solar corona in December 2011. The cometary ions produced by the sublimation of the comet nucleus were channelled along the magnetic field lines forming some filamented structures. Such structures appear to show small amplitude kink oscillations, which are used to determine the magnitude of the coronal magnetic field by coronal seismology.