ANALYSIS OF OSCILLATIONS OF THEQUIESCENT SOLAR FILAMENTS

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Abstract:

We have analyzed the time and height evolution of the long-period oscillations of two quiescent filaments, related to the initial processes of their thermal and/or dynamic instabilities and their correlation with the as-sociated coronal responses, mainly with Coronal Mass Ejections (CMEs).The study of oscillations was carried out during the Carrington Rotations CR 2151 and CR 2152, which coincide with the maximum of solar cycle 24, based on the images of multiple wavelengths, taken by SDO and GONG. A routine was carried out in Solar Soft, using the wavelet trans-form, which allows obtaining the frequency spectrum of long-period oscillations and their temporal evolution for the filaments. The results of this study show that these oscillations are mainly associated with small amplitude longitudinal movements and their origin is related to the thermal instabilities of filaments, which cause bidirectional fluxes in the filaments. Furthermore, an additional oscillation with a period of 6h was clearly detected in the wavelet and periodogram spectra, although it was not possible to identify longitudinal oscillations that coincided with this period. As well we have identified indications that in the studied events the magnetic reconnection process also occurs in layers below the corona, since the intensity disturbances observed are more prominent in the filters corresponding to the chromosphere, transition zone and the low corona, while they decay in the filters associated with the corona.

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