A Statistical Study on Characteristics of Disappearing Prominences

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Abstract

A disappearing or erupting prominence has a coronal mass ejection (CME) associated with it most of the time. If one has to predict the onset of CMEs, it is essential to monitor prominences on the solar disc, also known as filaments. For this purpose, an automated algorithm has been developed for detection and tracking of filaments observed in full-disc H-alpha images. This algorithm identifies all the filaments present on the disc, and tracks them through the full period of observation to generate their physical attributes such as size and length. The algorithm is applied to several filaments on the day of their disappearance, and a day before the disappearance. This enables us to study the change in attributes of the disappearing filaments between the two days. Based on these attributes, a threshold criterion would be established, which can be utilised to predict potential disappearance of a filament during real-time monitoring. The algorithm also accurately provides the onset time of the filament disppearance.

Keywords: filament disappearance, automated detection

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