# Automated detection, characterization, and tracking of filaments from SDO data

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**Abstract**

Thanks to the cadence and continuity of AIA and HMI observations, SDO offers unique data for detecting, characterizing, and tracking solar filaments, until their eruptions, which can be associated to coronal mass ejections. Because of the requirement of short latency when aiming at space weather applications, and because of the important data volume, only an automated detection can be worked out. We present the code "FILaments, Eruptions, and Activations detected from Space" (FILEAS) that we are developing at IAS for the automated detection and tracking of filaments. Detections are based on analysis of AIA 30.4 nm He II images and on magnetic polarity inversion lines derived from HMI. Following the tracking of filaments as their rotate with the Sun, filament characteristics are computed. We discuss the algorithms and performances of the code, and we compare its results with filaments detected in Halpha and already present in the Heliophysics Events Knowledgebase. We finally discuss the possibility of using this code for detecting eruptions in real time.

**Keywords:** Prominences, detection, SDO

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