
FILAMENT CONNECTIVITY AND "RECONNECTION"

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Abstract

Stable long lived solar filaments during their lives can approach each other, merge, and form circular structures. Since filaments follow large scale polarity inversion lines (PILs) of the photospheric magnetic field, their evolution reflects changes of the photospheric field distribution. On the other hand, filament interaction depends on their internal magnetic structure revealed in particular by filament chirality. Possibility of magnetic field line reconnection of neighbor filaments is discussed. Daily H-alpha filtergrams were analyzed for the period of maximum activity of the 23rd solar cycle. Examples of connectivity changes in a course of photospheric field evolution are presented. Sometimes filaments show pattern that is not easy to interpret. In some H α filtergrams, crossing filaments are seen, as well as filaments combined into trident-like or three-pointed-star-like structures. We have found that all crossing filaments reveal quadrupolar magnetic configurations of the photospheric field and presume the presence of null points in the corona.

Keywords: filaments, chirality, magnetic field, reconnection

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