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White-Light Solar Flares as Potential Clues for Stellar Superflares

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Two strong homologous white-light flares of GOES X-class occurred on the Sun on September 06, 2017. We describe the peculiarity of these events occurred in the super active region NOAA 12673, with a time interval, between their peaks, of about 3 hr. Using photospheric vector magnetograms, taken before the beginning of the two X-class events, as boundary conditions to reconstruct the non-linear force-free coronal magnetic field configuration, we identified two related 3D null points located at low heights above the photosphere (i.e. in very low corona). We deduce that their formation at such low altitudes may be ascribed to the strong and persistent shear motion of the main photospheric magnetic structures.

These events can be adopted as a hint for a possible interpretation of the activity of young G-type stars, recently reported by the Kepler mission. We argue that a possible explanation of the acceleration of huge numbers of particles producing white-light emission, during these events as during white-light flares in young Sun-like stars, might be attributed to the special accompanying conditions of the occurrence of magnetic reconnection at low altitudes in the stellar atmospheres.

Student poster?

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