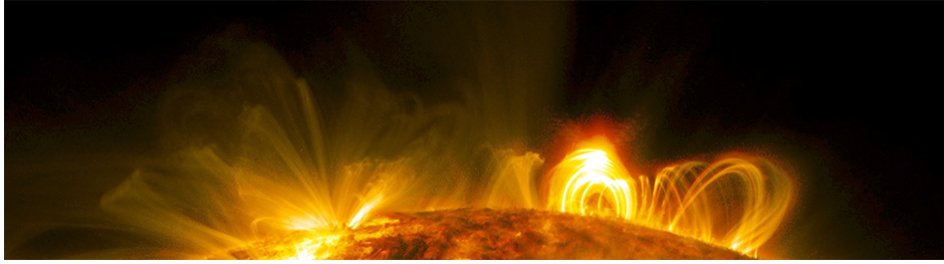


Particle Acceleration in Solar Flares and the Plasma Universe – Deciphering its features under magnetic reconnection



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The Magnetic Connection Between Flares, Rotation, and Age for the Volume-Complete Sample of Fully Convective M Dwarfs within 15 Parsecs

Tuesday, 16 November 2021 10:45 (30 minutes)

Fully convective M dwarfs display a diversity of magnetic phenomena, motivating questions of how these stars generate and sustain large scale coherent magnetic fields. We present an observational study that characterizes the relationship between age, stellar rotation, flares, and chromospheric activity for the volume-complete sample of M dwarfs with masses between 0.1 and 0.3 solar masses that reside within 15 parsecs. We found that these stars fall into two groups: The first set has ages less than 3 Gyr, flares frequently, and has short rotation periods, while the second group has ages in excess of 6 Gyr, with rotation periods exceeding 90 days, and flares very rarely. We find that all mid-to-late M dwarfs display the same slope for the frequency of flares as a function of energy, with an index sufficient to explain coronal heating.

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