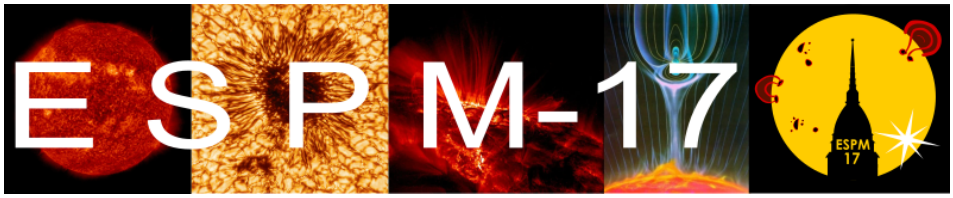

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Observational Signatures of Tearing Instability in the Current Sheet of a Solar Flare

Magnetic reconnection is a fundamental physical process that converts magnetic energy into plasma energy and particle energy in various astrophysical phenomena. In this talk, I will show a unique dataset of a solar flare where a continually stretched current sheet formed various plasmoids. EUV images captured reconnection inflows, outflows, and particularly the recurring plasma blobs (plasmoids). X-ray images reveal nonthermal emission sources at the lower end of the current sheet, presumably as large plasmoids with a sufficient amount of energetic electrons trapped in them. In the radio domain, an upward slowly drifting pulsation structure was observed, followed by a rare pair of oppositely drifting structures. These structures are supposed to map the evolution of the primary and secondary plasmoids formed in the current sheet. Our results on plasmoids at different locations and scales shed important light on the dynamics, plasma heating, particle acceleration, and transport processes in the turbulent current sheet and provide observational evidence for the cascading magnetic reconnection process.

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