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Suprathermal electrons observed by MMS in the magnetotail: What can they teach us about flare electron energization?

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The large-scale magnetic configuration and plasma beta of solar flares are similar to those of the magnetotail during reconnection. Studies of suprathermal electrons in the magnetotail may thus shed light on suprathermal electron production during flares. We will discuss statistical analysis and case studies of MMS magnetotail measurements to test out the following: (1) whether the primary electron energization occurs at the reconnection X-line or downstream, and (2) if magnetic islands are the dominant accelerators. Among the implications learned, one lesson is that the large-scale magnetic-field configuration plays a critical role in energizing electrons to suprathermal energies.

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