

M13b**MHD Simulations of Magnetodynamic Loop Flare Model**

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3D MHD simulations of the dynamical current injection model of loop flares (Uchida and Shibata, Sol. Phys. **116** (1988)) have been performed. Several new findings are presented.

A loop-shaped potential magnetic field in a simplified solar atmosphere is taken as the initial state. (i) When a single magnetic twist packet is released into the loop in one footpoint, the twist propagates across the loop to the other footpoint, in a manner reminiscent of active region transient brightenings. (ii) When two twists of similar strength and sense of helicity are released into the loop, one from each footpoint, their collision at the loop top produces a high temperature region with helical kinking of the loop. (iii) When two twists of similar strength and opposite sense of helicity are introduced into the loop, a high temperature region is created with helical kinking, but the kinking motion disappears as the two twists unwind each other in their collision. Uchida and Shibata (1988) treated case (iii), but their 2.5D simulations were unable to include kinking motion as has been observed by the Yohkoh satellite, since these motions are fully three-dimensional.