Trajectories of microwave prominence eruptions

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The classical coronal mass ejection (CME) scenario describes that CMEs are associated with helmet streamer configurations, in which a quiescent prominence over a magnetic neutral line becomes unstable and starts to erupt, resulting in a CME (e.g., Low 1994).

Recently, Hori (2000) studied two microwave prominences that were initially not embedded in a streamer but moved toward the streamer latitude and then erupted or disappeared.

These prominences seem to be different from those in the classical CME scenario. Further, such prominence behavior suggests that streamers play the role of ``mass corridor'' through which coronal mass flows out toward the interplanetary space (Crooker et al. 1993).

In order to address how prominence motions affect or reflect the surrounding coronal structures, we examined trajectories of 50 prominence eruptions that were observed with the Nobeyama Radioheliograph (NoRH) at 17 GHz near solar maximum (1999-2000). By comparing the prominence trajectories with the white-light synoptic maps from the LASCO C2 coronagraph on the {¥it SOHO} spacecraft,

we confirmed that coronal mass motions involving eruptive prominences and CMEs are not random but are organized by bundle of pre-existing streamers. Large scale evolution of coronal features suggests that streamers are a signature of multiple plasma sheets emanating from active regions, arcades, trans-equatorial interconnecting loops, and polar crown filaments, as consistent with Crooker et al. (1993).

This study demonstrates that microwave observations can provide useful information
on the activity at the base of such ``coronal mass corridors''.