

## **Dichotomy of Solar Coronal Jets: Standard Jets and Blowout Jets**

Ronald. L. Moore, Jonathan W. Cirtain, Alphonse C. Sterling, David A. Falconer

By examining many X-ray jets in *Hinode*/XRT coronal X-ray movies of the polar coronal holes, we found that there is a dichotomy of polar X-ray jets. About two thirds fit the standard reconnection picture for coronal jets, and about one third are another type. We present observations indicating that the non-standard jets are counterparts of erupting-loop H $\alpha$  macrospicules, jets in which the jet-base magnetic arch undergoes a miniature version of the blowout eruptions that produce major CMEs. From the coronal X-ray movies we present in detail two typical standard X-ray jets and two typical blowout X-ray jets that were also caught in He II 304 Å snapshots from STEREO/EUVI. The distinguishing features of blowout X-ray jets are (1) X-ray brightening inside the base arch in addition to the outside bright point that standard jets have, (2) blowout eruption of the base arch's core field, often carrying a filament of cool ( $T \sim 10^4$ - $10^5$  K) plasma, and (3) an extra jet-spire strand rooted close to the bright point. We present cartoons showing how reconnection during blowout eruption of the base arch could produce the observed features of blowout X-ray jets. We infer that (1) the standard-jet/blowout-jet dichotomy of coronal jets results from the dichotomy of base arches that do not have and base arches that do have enough shear and twist to erupt open, and (2) there is a large class of spicules that are standard jets and a comparably large class of spicules that are blowout jets.

This work was funded by NASA's Science Mission Directorate through the Heliophysics Guest Investigators Program, the *Hinode* Project, and the Living With a Star Targeted Research and Technology Program.