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Space and time resolved EUV burst associated with magnetic reconnection in magnetically driven plasma jets KIL-BYOUNG CHAI, PAUL BELLAN, Caltech — We have developed a high-speed EUV movie camera to study magnetic reconnection associated with the Rayleigh-Taylor (RT) instability [1] in the Caltech MHD jet experiment. In order to achieve high speed, a fast, visible-light movie camera is utilized with a fast-decaying YAG:Ce scintillator crystal that converts EUV radiation into visible light. A custom-designed Si/Mo multilayer mirror having central wavelength at 36 nm (34 eV) and 10 nm FWHM is used to focus EUV photons onto the scintillator crystal. After confirming the spatial resolution and field of view of our EUV camera, we have installed it on the plasma chamber and have successfully made EUV movies of the plasma. The EUV images are similar to the visible images when the jet starts kinking but before the kink acceleration drives the RT unstable. The EUV images differ at the instant the RT causes the jet to break off from its source electrode. A small jet segment becomes extremely bright in EUV and the visible light dims somewhat at this location. We plan to study why and how this intense EUV radiation develops.

[1] A. L. Moser and P. M. Bellan, Nature 482, 379 (2012).

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