Abstract Submitted
for the DPP14 Meeting of
The American Physical Society

EUV and visible light imaging of magnetic reconnection associated with Rayleigh-Taylor instability in MHD driven jets KIL-BYOUNG CHAI, PAUL BELLAN, California Institute of Technology — A high-speed EUV movie camera has been developed for imaging magnetic reconnection in the Caltech MHD-driven jet experiment. In order to achieve high temporal resolution, a high-speed visible camera (up to $2x10^8$ fps) is utilized with a fast-decaying YAG:Ce scintillator crystal that converts EUV radiation into visible light. A custom-designed, broadband Si/Mo multilayer mirror having central wavelength at 36 nm is used to form an image on the scintillator crystal. The jet 3D structure is imaged in visible light by a two-branch fiber bundle which simultaneously captures end and side view images. The fiber bundle is coupled to the high-speed visible light movie camera. Comparison of EUV and visible light movies shows that the EUV images are similar to visible light images at early times. However, the EUV images differ from the visible light images when a Rayleigh-Taylor instability occurs. A small segment near the apex of the kinked jet becomes extremely bright in EUV but dark in visible light. Future plans include further investigation of this bright spot, plasma evolution and upgrade of optical sensitivity by better optical coupling to the scintillator crystal.

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Date submitted: 08 Jul 2014 Electronic form version 1.4