Abstract Submitted
for the DPP14 Meeting of
The American Physical Society

Preliminary Results for Coded Aperture Plasma Diagnostic[1]
MAGNUS HAW, PAUL BELLAN, Caltech — A 1D coded aperture camera has been developed as a prototype for a high speed, wavelength-independent, plasma imaging diagnostic. Images are obtained via a coded or masked aperture that modulates incoming light to produce an invertible linear transform of the image on a detector. The system requires no lenses or mirrors and can be thought of as a multiplexed pinhole camera (with comparable resolution and greater signal than a single pinhole). The inexpensive custom-built system has a 13x1cm field of view, a vertical spatial resolution of 2mm, and a temporal resolution of 1μs. Visible light images of the Caltech MHD-driven jet experiment agree with simultaneous images obtained with a conventional camera. For the simple jet geometry, the system can also extract depth information from single images. Further work will revolve around improving shielding and acquiring X-ray and EUV scintillators for imaging in those wavelengths.

[1]Supported by DOE, NSF

Magnus Haw
Caltech

Date submitted: 12 Jul 2014 Electronic form version 1.4