

Abstract Submitted
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Imaging plasmas with coded aperture methods instead of conventional optics PAKORN WONGWAITAYAKORNKUL¹, Rice University, PAUL BELLAN, California Institute of Technology — The spheromak and astrophysical jet plasma at Caltech emits localized EUV and X-rays associated with magnetic reconnection. However, conventional optics does not work for EUV or X-rays due to their high energy. Coded aperture imaging is an alternative method that will work at these energies. The technique has been used in spacecraft for high-energy radiation and also in nuclear medicine. Coded aperture imaging works by having patterns of materials opaque to various wavelengths block and unblock radiation in a known pattern. The original image can be determined from a numerical procedure that inverts information from the coded shadow on the detector plane. A one-dimensional coded mask has been designed and constructed for visualization of the evolution of a 1-d cross-section image of the Caltech plasmas. The mask is constructed from Hadamard matrices. Arrays of photo-detectors will be assembled to obtain an image of the plasmas in the visible light range. The experiment will ultimately be re-configured to image X-ray and EUV radiation.

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