Abstract Submitted
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A Low Cost Photo-Electric Detector for an Arched Flux Tube Experiment[1] RORY PERKINS, PAUL BELLAN, Caltech — A low cost EUV detector is being developed for use in a laboratory experiment where two plasma-filled flux tubes merge in either a co-helicity or counter-helicity arrangement (J.F. Hansen, S.K.P. Tripathi, and P.M. Bellan, Phys. Plasma 2, 3177(2004)). The detector utilizes the photo-electric effect to measure EUV radiation from 10 to 120 nm (S.J. Zweben, R.J. Taylor, Plasma Physics, Vol. 23, No. 4(1981)). The detector geometry is coaxial. A cylindrical collimator capped in wire mesh was placed around the magnesium disk to collimate the field of view and reduce capacitive pick-up. Magnets placed outside the collimator deflect incoming charged particles. The detector was tested in a vacuum chamber with a flash lamp located 50 cm from the detector. A current-to-voltage amplifier with a 1 microsecond rise-time read the detector's output on the test chamber. The detector output on the main experimental chamber was sent directly into 50 ohms with no amplification and produced signals above 200 mV, well above the observed noise. The rise-time for this configuration is well below 1 microsecond. An array of such detectors is currently being designed to image the flux tubes in this EUV range.

[1]Supoprted by USDOE

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