

Abstract Submitted
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X-ray Imaging System and Charged Particle Energy Analyzer for a Laboratory Plasma¹ VERNON CHAPLIN, PAUL BELLAN, DEEPAK KUMAR, California Institute of Technology — We report on the development of two new diagnostics for the solar coronal loop experiment at Caltech. A gated x-ray imaging system sensitive to photons with energies 5 eV and above has been designed to complement the fast visual camera in use at the experiment. The shutter mechanism is provided by a high-voltage pulse applied to a micro-channel plate (MCP), allowing for exposure times as short as 10 ns. Spatially resolved images of x-ray emission at specific times during plasma discharges have the potential to provide a greater understanding of the magnetic reconnection that occurs when two plasma loops merge. A charged particle energy analyzer consisting of a pair of coaxial conducting cylinders held at a variable potential difference has also been designed and tested. Optimal refocusing of slightly off-axis particle orbits occurs $\pi/\sqrt{2}$ radians from the entrance slit [1], thus we measure the output current at this point.

[1] A. L. Hughes and V. Rojansky, *Phys. Rev.***34** 284-290 (1929).

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