

Abstract Submitted
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Observing Energetic Bursts in the Caltech Solar Coronal Loop Simulation¹ R.J. PERKINS, G.S. YUN, P.M. BELLAN, California Institute of Technology — X-ray bursts have previously been observed in a solar coronal loop experiment (J.F. Hansen, S.K.P. Tripathi, and P.M. Bellan, Phys. Plasma 2, 3177(2004)) where two parallel plasma-filled flux tubes merged in either a co-helicity or counter-helicity arrangement. These x-ray bursts were observed with a set of x-ray photo-diodes. We are developing means to observe these bursts with additional diagnostics. A low cost photo-electric detector was thoroughly tested on a test chamber using a xenon flashlamp. The detector utilizes the low work function of magnesium to measure ultraviolet radiation. A photo-scintillator is being developed to detect hard x-ray emission down to 10 keV. A smaller photo-scintillator was previously constructed and used in the Caltech spheromak experiment; we have enlarged the scintillating volume in hopes of increasing sensitivity. Finally, in a single loop experiment, spectroscopic measurements detect the onset of oxygen impurity lines at the loop apex; the onset is simultaneous with the formation of a bright spot at the same location. Future spectroscopic measurements are planned to investigate the apex region during merging.

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