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Embedding magnetic field lines in the plasma jet of an exploding radial foil on COBRA[1] PETER SCHRAFEL, PIERRE GOURDAIN, JOHN GREENLY, BRUCE KUSSE, Cornell University — Previous investigations of exploding radial foils have shown the formation of an axial plasma jet in the early stages of the foil explosion. In this case a thin load foil was pressed at an outer annulus held at ground, and contacted in the center by a small straight rod cathode driven by the 1MA COBRA accelerator. The present experiments look at the effects of inducing a transient magnetic field in the region containing the plasma jet. This induced magnetic field is created in one of two ways: twisting the rod cathode to have a helical coil segment near the foil, or putting an inductive current path in parallel to the straight rod cathode. Of great interest is whether this applied magnetic field can be embedded into the plasma jet and influence its development. The jet is diagnosed visually with laser shadowgraphy and observation of XUV emission. B-dot probes measure the magnetic field strength in the region near the jet.

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