INTERACTIONS BETWEEN TWO PLASMA BUBBLES IN RADIAL FOIL CONFIGURATIONS*

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A radial foil configuration consists of a 5-micron-thick circular disk of conducting material such as aluminum with anode contact around the outer edge of the disk and cathode contact near the center. The cathode is usually a small diameter pin electrode (~1 mm). In this study, we investigate the interactions between plasma bubbles formed by two closely spaced cathode pins.

In our experiments, we determined that the magnetic field between the two pins is weak. The **J** x **B** force is therefore essentially zero in that region. Through our work with the COrnell Beam Research Accelerator (COBRA), we observed that each cathode produces a plasma bubble that contains a jet and grows in size. These bubbles approach one another and interact, yielding a complex magnetic structure that will be discussed.

Contrary to our hypothesis, we observed that two plasma bubbles do not behave like those created by isolated single pins when the distance between the cathode pins is comparable to the size of the bubble. The presence of an intertwined plasma jet indicates a degree of interaction between the individual bubbles earlier than predicted by our hypotheses.

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