

Abstract Submitted  
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**Experimental investigation of plasma jet detaching to form a spheromak**<sup>1</sup> DEEPAK KUMAR, PAUL BELLAN, California Institute of Technology — An axial plasma jet is formed from a planar electrode at the Caltech Spheromak Experiment. The jet ingests plasma from near the electrode and also becomes collimated. Finally, the jet detaches from the electrode to form a spheromak-like configuration. The dynamics of hydrogen plasma jets are investigated using a magnetic probe array, a high speed camera, and a newly built heterodyne HeNe density interferometer\*. Image intensity is found to directly correlate with the plasma density inferred by the interferometer. The observed density is also found to scale with the amount of gas available in the plenum leading to the vacuum chamber, thus confirming that wall recycling does not contribute substantially to the plasma density. Detailed investigation of the spheromak pre-formation stage is expected to give insights into the dependence of spheromak plasma density on bias flux, discharge voltage and amount of ionized gas available in the plenum.

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