Abstract Submitted for the DFD07 Meeting of The American Physical Society

An experimental study of an annular jet with zero blockage ratio<sup>1</sup> JAMES HARLAN, DOUGLAS SMITH, University of Wyoming — An annular jet with zero blockage ratio was created at the exit of a tube with a dielectric barrierdischarge plasma actuator. The plasma actuator creates an annular wall jet along the interior surface of the tube and just inside of the tube exit. At the exit of the tube, the wall jet becomes an annular free jet with no flow blockage interior to the annulus. Particle image velocimetry measurements were made in a plane bisecting the jet axis. The velocity fields reveal an annular jet that grows preferentially towards the axis of the jet. Streamtraces obtained from the mean velocity field reveal that the fluid interior to the jet is drawn along the jet axis and radially outward as the annular jet entrains fluid. Contours of the streamwise component of the velocity reveal a region of nearly stagnant fluid interior to the annular jet just upstream of the merging of the annular jet shear layers.

<sup>1</sup>This work was supported in part by the Wyoming NSF EPSCoR Undergraduate Research Fellowship program.

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Date submitted: 01 Aug 2007

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