

Abstract Submitted  
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**Dense Hypervelocity Plasma Jets**<sup>1</sup> F. DOUGLAS WITHERSPOON, ANDREW CASE, MICHAEL W. PHILLIPS, HyperV Technologies Corp. — High velocity dense plasma jets are under continued experimental development for a variety of fusion applications including refueling, disruption mitigation, rotation drive, and magnetized target fusion. The technical goal is to accelerate plasma slugs of density  $> 10^{17} \text{cm}^{-3}$  and total mass  $> 100$  micrograms to velocities  $> 200$  km/s. The approach utilizes symmetrical injection of very high density plasma into a coaxial EM accelerator having a tailored cross-section geometry to prevent formation of the blow-by instability. Injected plasma is generated by electrothermal capillary discharges using either cylindrical capillaries or a newer toroidal spark gap arrangement that has worked at pressures as low as  $3.5 \times 10^{-6}$  Torr in bench tests. Experimental plasma data will be presented for a complete 32 injector accelerator system recently built for driving rotation in the Maryland MCX experiment which utilizes the cylindrical capillaries, and also for a 50 spark gap test unit currently under construction.

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