Abstract Submitted
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Plasma jets merging simulation S.A. GALKIN, I.N. BOGATU, J.S. KIM, Far-Tech, Inc., F.D. WITHERSPOON, M.W. PHILLIPS, HyperV Technologies Corp., T.P. HUGHES, D.R. WELCH, Voss Scientific, LLC, I. GOLOVKIN, J. MACFARLANE, Prism — The progress on numerical 3D simulations of high density high Mach number plasma jets merging is presented. The modeling was conducted with the particle-in-cell LSP code [1]. A few hypersonic plasma jets (Mach number between 5 and 50) with high density (within the range of 10^{15}-10^{17} cm^{-3}) were injected for merging in a low density low temperature neutral background gas ($\approx 10^{13}$ cm^{-3}). The dynamics of the merging was studied. Onset of a strong instability, which was observed in the modeling of two, three and five plasma merging jets [2], can essentially affect the front formation and finally can lead to a high turbulent flow. The nature of the instability is discussed. The progress on HyperV plasma accelerator experiment simulation and comparison with a recent experimental data is also reported.
[1] T. P. Hughes, S. S. Yu, and R. E. Clark, Phys. Rev. ST Accel. Beams 2, 110401, 1999.
[2] S. A. Galkin, I. N. Bogatu, J. S. Kim, to be published in PPPS/ICOP 2007 Conference Proceedings. Work is supported by the US DOE SBIR grant and by US DOE Office of Fusion Energy Sciences.

Sergei A. Galkin
Far-Tech, Inc.

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