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Experimental study of a supersonic plasma jet interacting with an ambient gas[1] F. SUZUKI-VIDAL, Imperial College London, S.V. LEBEDEV, Imeprial College London, M. KRISHNAN, Alameda Applied Sciences Corporation, G. SWADLING, G. BURDIAK, S.N. BLAND, P. DE GROUCHY, G.N. HALL, A.J. HARVEY-THOMPSON, E. KHOORY, L. PICKWORTH, J. SKIDMORE, J.P. CHITTENDEN, M. BOCCHI, Imperial College London, A. CIARDI, Ecole Normale Superieure — The dynamics of the interaction of a supersonic, radiatively cooled plasma jet with an ambient gas are presented. The experimental setup consists of a radial foil, a μm-thick aluminum disc held between two concentric electrodes and subjected to a 1.4 MA, 250 ns current pulse from the MAGPIE generator. The plasma flow, with typical velocities of $\sim$70-90 km/s, is produced by the JxB force acting on the plasma ablated from the foil. A jet is formed from the convergence of this ablated plasma on the axis of the system. The jet interacts with an argon ambient (N$\sim 10^{16-17}$ cm^{-3}) from a supersonic gas nozzle (Mach$\sim$9). The formation of several shock structures from the interaction of the jet with the gas will be presented and discussed.

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