

Abstract Submitted
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Development of Generator of High-Velocity Gas Jet by using a Compact Toroid Injector D. LIU, N. FUKUMOTO, University of Hyogo, T. TAKAHASHI, Gunma University, J. MIYAZAWA, National Institute for Fusion Science, Y. KIKUCHI, M. NAGATA, University of Hyogo — Fueling experiments by supersonic gas jets has been conducted on several tokamaks. The ability of gas jets, however, is not enough to penetrate into the plasma core. Rozhansky et al have proposed a new technique for acceleration of jet by a plasma gun to enhance the ability [1]. The jet has been successfully accelerated to 100 km/s, resulting in penetration into the plasma core on Globus-M. We have so far developed compact toroid (CT) injectors as a kind of plasma gun, and performed CT injection experiments. We have therefore considered generation of such a gas jet by using a CT injector. The preliminary experiment has been carried out to generate fast gas jets by CT injection into a plasma neutralizer cell with a single-stage CT injector at the University of Hyogo. The typical CT parameters are: $1\sim 4 \times 10^{21} \text{ m}^{-3}$ in electron density and $30\sim 70 \text{ km/s}$ in velocity. The neutralization efficiency of CT plasma has been also estimated by calculation. The technique will be applied to a CT injector of SPICA for an advanced fueller into LHD.

[1] V. Rozhansky et al, Proc. 33rd EPS Conf. on Plasma Phys., Roma, 2006, 30I, P-4.107 (2006).

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