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Preliminary experiment of high-speed gas flow generation by a compact toroid injection into a gas neutralizer Y. ITO, D. LIU, T. SHOJI, R. NAKANISHI, N. FUKUMOTO, T. SEKIOKA, Y. KIKUCHI, M. NAGATA, Univ. of Hyogo — A supersonic gas jet injection has been considered to be a new technique for future reactor fuelling and disruption mitigation in tokamak devices [1]. We have recently started to investigate a production of high-speed gas flow by using a compact toroid (CT) injection into a hydrogen gas neutralizer. The electron density of the CT plasma is 1$\sim$4 x10^{21} m^{-3}, and the CT speed is 30$\sim$70 km/s in the preliminary experiment. The kinetic-energy measurements of ions and neutrals after the neutralization were carried out by using an electrostatic ion energy analyzer and time-of-flight technique. An enhancement of the H_β emission level, a significant decay of the CT plasma density and the magnetic field profile have been observed after the neutralization when the neutral pressure is about 10^{-3} Torr. It could be considered that high-energy neutral particles were generated by a charge exchange process from the CT plasma to the neutral particles.
[1] V. Rozhansky, et al., Nucl. Fusion **46**, 367 (2006).

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