

Abstract Submitted
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A Field-Reversed Configuration Plasma Translated into a Neutral Gas Atmosphere¹ JUN'ICHI SEKIGUCHI, TOMOHIKO ASAI, TSUTOMU TAKAHASHI, HIROTOSHI ANDO, MAMIKO ARAI, SERI KATAYAMA, Nihon University, TOSHIKI TAKAHASHI, Gunma University — A field-reversed configuration (FRC) is a compact toroid dominantly with poloidal magnetic field. Because of its simply-connected configuration, an FRC can be translated axially along a gradient of guide magnetic field, and trapped in a confinement region with quasi-static external magnetic field. FRC translation experiments have been performed several facilities. Translation speed of those translated FRCs is comparable with super-Alfvénic speed of approximately 200km/s. In this experiments, FRC translation has been performed on the FAT (FRC Amplification via Translation) facility. Achieved translation speed in the case of translation into a confinement chamber maintained as the vacuum state is in the range from 130 to 210 km/s. On the other hand, FRC translation into a statically filled deuterium gas atmosphere has also been performed. In the case of translation into filled neutral gas, FRC translation speed is approximately 80km/s and the separatrix volume has extremely expanded compared with the case of a vacuum state. The phenomenon suggests the presence of regeneration process of translation kinetic energy back into the internal plasma energy during the translation process.

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