

Abstract Submitted  
for the DPP12 Meeting of  
The American Physical Society

**Target Injector and Sabot Remover for IFE** HIROKI YOSHIDA, NOBUKAZU KAMEYAMA, Gifu University — Target injectors for IFE are required to inject targets to the reactor center at a velocity of over 100 m/s with accuracy of several millimeters. A target injector system with a magnetic sabot remover is developed to demonstrate injection of polystyrene targets. A typical target used in this study is 4.0 mm in diameter and 0.8 mg in weight. It is inserted into an aluminum sabot that is 9.2 mm in outer diameter and 40 mm in length. They are accelerated together by a pneumatic gun. Before injection into the reactor, the sabot is removed for laser irradiation. The sabot remover is composed of Neodymium magnets array that generates Lorentz force as a result of interaction between the magnets' field and induced current on the sabot. The Neodymium magnets are 14 mm at inner diameter and 316 mT on its surface. The magnetic array is designed and optimized its magnets number for complete target extraction. The theoretically and experimentally confirmed deceleration rate of the sabot is 60.2 m/s/s per one meter. The targets are shot into the vacuum chamber after extraction from the sabot at accelerated velocity of 30 m/s. The experimentally obtained injection accuracy is 5.3 mm in horizontal direction and 4.8 mm in vertical direction.

Hiroki Yoshida  
Gifu University

Date submitted: 13 Jul 2012

Electronic form version 1.4