

Target injection into a power reactor in heavy ion fusion

Takeaki KUBO¹, Takahiro KARINO¹, Takuya IINUMA¹, Syunsuke KONDO¹,

Hiroki. KATOH¹, Shigeo. KAWATA¹ and Alexander I. OGOYSKI²

¹Graduate School of Engineering, Utsunomiya University, Japan

E-mail: mt166216@cc.utsunomiya-u.ac.jp, kwt@cc.utsunomiya-u.ac.jp

²Department of Physics, Technical University of Varna, Bulgaria

In heavy ion inertial fusion (HIF), the scientific issues include the generation and transport of heavy ion beam (HIB), the pellet design, the realistic nuclear fusion reactor design, etc. In this paper, we present a target injection into a power reactor in HIF. We employed a magnetic correction method proposed in Ref. [1] to reduce the target alignment error in a HIF reactor chamber, including the gravity, the reactor gas drag force and the injection errors. We found that the magnetic correction device is effective to construct a robust target injection system.

Figure 1 shows a target injection system into a fusion reactor. At $x=0$ (at the reactor wall), 8 permanent magnets are arranged [1] to make the system robust against the injection errors. The magnetic correction device works well to correct the target trajectory (see Fig. 2). We present the detail results of the target alignment system.

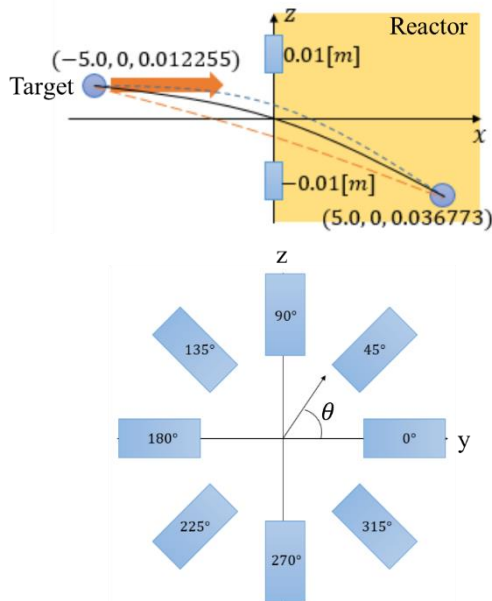


Fig. 1 Target injection system model

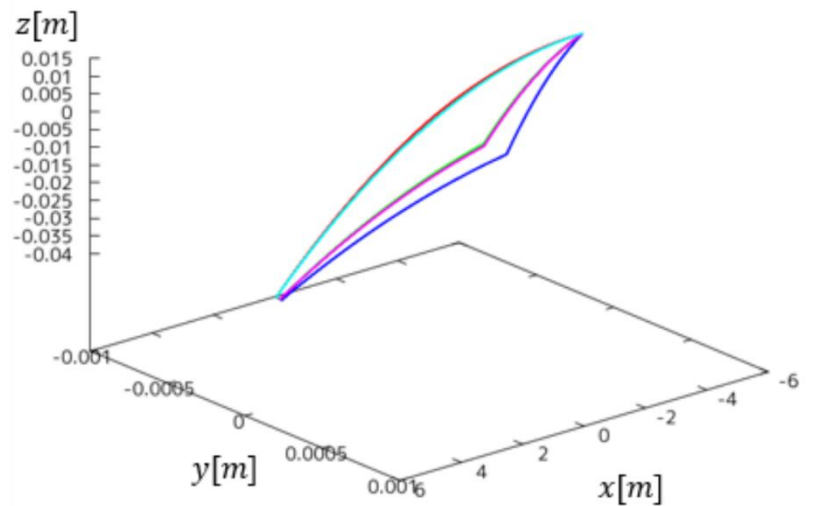


Fig. 2 Adjusting result by magnetic field

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Reference

[1] R. Tsuji, "Trajectory adjusting system using a magnetic lens for a Pb-coated superconducting IFE target", Fusion Engineering and Design, 81, 2877-2885 (2006)