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**Injection of Compact Torus into the HIST spherical torus plasmas**

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University of Hyogo — The three-dimensional interaction of a spheromak-like compact torus (CT) plasma with spherical torus (ST) plasmas has been experimentally studied to understand magnetic reconnection, helicity current drive, particle fuelling and Alfvén wave excitation [1]. We have examined how the sign of helicity (Co-HI and Counter-HI) of the injected CT influences on the ST plasmas on HIST [2]. The dynamics of the CT have been identified to be significantly different between the both injection cases. Time-frequency analysis shows that the fluctuation induced in the co-HI case has the maximum spectral amplitude at around 300 – 400 kHz that may indicate the magnetic reconnection. In this case, the CT particle is released quickly at a periphery region, but on the other hand, for the counter-HI case, the CT could penetrate deeply into the core region as accompanied by Alfvén wave due to no magnetic reconnection.

[1] M. Nagata, et al., Nucl. Fusion **45**, 1056 (2005)

[2] M. Nagata, et al., Physics of Plasmas **10**, 2932 (2003)

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