

P5.1007 The New Compact Torus Injection System on KTX device

Friday, 12 July 2019 14:00 (2 hours)

See full abstract here:

<http://ocs.ciemat.es/EPS2019ABS/pdf/P5.1007.pdf>

A new compact torus injection (KTX-CTI) system is being developed on Keda Torus eXperiment (KTX), which is a newly built medium size reversed field pinch device. The KTXCTI is a three-meter long linear device designed to inject compact torus (CT) into KTX at a high speed of over 100km/s. The tangential injection angle is 25° with respect to the major radius direction at the CT entry location in the middle plane shown in Fig. 1, and the maximum injection mass of CT is 50 μg for hydrogen, which is about 30% of the KTX plasma particle inventory. The KTX-CTI includes the vacuum vessel, centre solenoid, the fast gas valves, FPGA timing system, pulse power supplies and CT exclusive diagnostics. Currently, the KTXCTI is in the engineering commissioning. CTs injected with KTX-CTI have tangential momentum, it is possible to induce and to sustain toroidal rotation of the KTX plasma due to the momentum transfer from the CT to KTX plasma. In addition, a small amount of helicity can also be injected for the single helicity mode (SH) research, which is expected to improve the confinement for reversed field pinch plasma. As an advanced fuelling system with very high penetration speed about two orders higher than common fuelling, the KTX-CTI will be used as a prototype device prepared for central fuelling of China Fusion Engineering Test Reactor (CFETR) in the future.

*This work is supported by the National Magnetic Confinement Fusion Science Program of China under grant nos. 2017YFE0301700.

Presenter: CHEN, C. (EPS 2019)

Session Classification: Poster P5

Track Classification: MCF