

Influence of Neutral Beam Injection Direction on Fast Ion Distribution Function in Large Helical Device (LHD)

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Effective ion heating and good fast ion confinement are essential for ignition. Therefore the influence of various types of plasma heating on fast ion distribution function in various configurations of magnetic field should be studied. To study distribution of fast ions in LHD plasma a new Angular Resolved Multi-Sightline Neutral Particle Analyzer (ARMS-NPA) was developed [1-3]. It scans plasma by 20 sightlines and can provide detailed information about angular and radial distribution of fast particles. In this paper the influence of co- and counter-Neutral Beam injection on angular distribution of suprathermal particle tail is shown (Fig.1). Measurements were made for different directions of magnetic field. Dependence of width of suprathermal ion tail angular distribution during co- or counter- NBI was measured for different magnetic field strength and demonstrated in current work. The simulation results of fast particle orbits are shown in order to explain the experimental results.

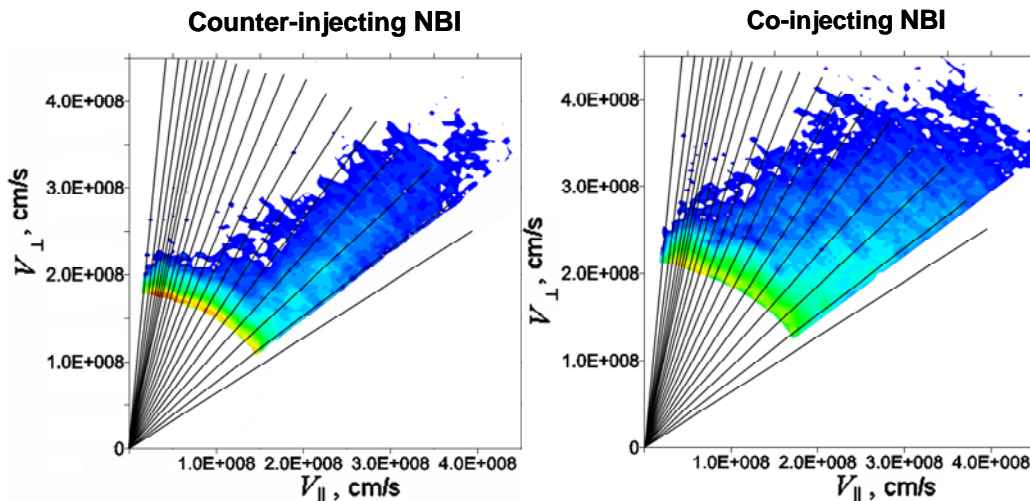


Fig.1 Fast ion angular distribution in co- and counter- neutral beam injection.

- [1] E. A. Veshchev *et.al.*, Rev. Sci. Instrum., **77**, 10F129 (2006)
- [2] E. A. Veshchev *et.al.*, Plasma and Fusion Research, **2**, S1073 (2007)
- [3] E. A. Veshchev *et.al.*, Plasma and Fusion Research, **3**, S1035 (2008)