

# Fast Wave induced ICRF plasma Expansion in ADITYA torus

Wednesday 24 October 2018 14:00 (20 minutes)

In ADITYA tokamak, ICRF plasma is produced by a single strap poloidal antenna located at LFS by exciting 24.8 MHz with a RF power  $< 80$  kW for the purpose of developing Ion Cyclotron Wall Conditioning (ICWC) scenarios. Suitable combination of density (by regulating RF power and fill pressure) and Bt are investigated to allow the Fast Wave (FW) propagation in the torus volume. Initially at high Bt, the ICWC plasma which was previously localized inside the antenna box, is spread along the toroidal field lines. The plasma is radially and poloidally localized only near the antenna location. Below a particular Bt, plasma is expanded into the vessel in radial direction. This expansion of plasma is explained by considering the cold ion dispersion of FWs. It is observed that the Slow Wave branch is non-propagating for the entire Bt range, whereas, FW starts propagating towards HFS at Bt  $< 0.2$  T for the entire plasma volume. This critical Bt reasonably agrees with the experiment. This scenario could be useful in wall conditioning and wall coating in future fusion machines, where plasma uniformity is desirable.

## Country or International Organization

India

## Paper Number

EX/P4-28

**Author:** Dr MISHRA, Kishore (Institute for Plasma Research)

**Co-authors:** Mr VARIA, Atul (IPR); Mr KADIA, B (IPR); Mr RATHI, D (IPR); Mrs ASHOK, G (IPR); Mr JADHAV, H (IPR); Dr GHOSH, Joydeep (Institute for Plasma Research); Mr JADEJA, K (IPR); Mr PARMAR, K (IPR); Mr PARIHAR, M (IPR); Dr GUPTA, Manoj (IPR); Mrs RAMAIYA, Nilam (IPR); Mr JOSHI, R (IPR); Mrs MANCHANDA, R (IPR); Mr TANNA, Rakesh (Institute For Plasma Research); Mr BHAT, S (IPR); Mr KUMAR, S (IPR); Dr KULKARNI, Sanjay (Institute for Plasma Research); Mr SRINIVAS, Y (IPR)

**Presenter:** Dr MISHRA, Kishore (Institute for Plasma Research)

**Session Classification:** P4 Posters