

(TG3) Spectroscopy group report

Nov. 24, 2021 (T. Oishi)

Date: Nov. 19, 2021

Time: 9:49 – 11:49

Shot#: 173079 – 173117 (39 shots)

Prior wall conditioning: No

Divertor pump: ON

Gas puff: D₂

Pellet: No

NBI#(1, 2, 3, 4, 5)=gas(D, D, D, D, D)=P(2.7, 3.3, 3.2, 8.0, 6.5)MW

ECH(77GHz)=ant(5.5-U, 2-OUR)=P(0.703, 0.792)MW

ECH(154GHz)=ant(2-OLL, 2-OUL, 2-OLR)=P(0, 0.799, 0.825)MW

ICH(3.5U, 3.5L, 4.5U, 4.5L)=P(0, 0, 0, 0)MW

Neutron yield integrated over the experiment = 5.2×10^{16}

Topics

1. Diagnosis of fast ions produced by NNBI with FIDA spectroscopy (C. Muscatello (UCI), S. Kamio)

Diagnosis of fast ions produced by NNBI with FIDA spectroscopy

C.M. Muscatello

Objectives

- Validation of FIDA technique applied to very high-energy (>100keV) ions produced by N-NBI
- Verification of theoretical distribution functions with synthetic diagnostic modeling (GNET & FIDASIM)

Approach and Outcome

- Populate fast-ion distribution function. Scan n_{fast} (P_{NBI}) and slowing-down time (n_e , T_e).
- 34 shots total
- $B_{ax}=2.75$ T, Polarity = CW, $R_{ax}=3.6$ m, D beams into D gas
- NBs and gyrotrons operated with high reliability
- FICXS, CXS, CTS, Thomson scattering for fast-ion and plasma profiles
- Obtain good set of scans

	Low P_{NBI}			Med P_{NBI}			High P_{NBI}		
	Low n_e	Med n_e	High n_e	Low n_e	Med n_e	High n_e	Low n_e	Med n_e	High n_e
Low T_e	✓	✓	✓	✓	✓	✓	✓	✓	✓
Med T_e	✓	✓	✓	✓	✓	✓			
High T_e	✓	✓	✓	✓	✓	✓			

