

## P2.1064 Validation of the BEAMS3D deposition model on Wendelstein 7-X

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See full abstract here

<http://ocs.ciemat.es/EPS2019ABS/pdf/P2.1064.pdf>

The BEAMS3D stellarator neutral beam injection (NBI) code [1] is validated against the experimental data of Wendelstein 7-X (W7-X). Experiments scanning density and magnetic configuration were performed in W7-X with the newly commissioned NBI system. Composed of two sources in a single beam box, this NBI system provided 3.6 MW of heating while fueling the plasma [2]. In order to properly benchmark the BEAMS3D code, equilibrium reconstructions of the plasma parameters were performed using the STELLOPT code [3]. These reconstructions included flux loops, segmented Rogowski coils, Thomson scattering, Electron Cyclotron Emission, and the X-Ray Imaging Crystal Spectrometer on W7-X. The reconstructed equilibria provide not only the three dimensional mapping via the VMEC equilibrium but also profiles of electron temperature, electron density, ion temperature, and radial electric field. Low, medium, and high density discharges are compared against measurements to verify the deposition model of the BEAMS3D code. In addition, configuration variation is explored via experiments in the high-iota and high mirror configurations. Simulation data is compared against shine through and beam deposition measurements.

References

[1] M. McMillan and S.A. Lazerson, *Plas. Phys. Cont. Fusion* 56 (2014)

[2] N. Rust et al., *Fusion Eng. and Design* 86 (2011) [3] S.A. Lazerson et al., *Nucl.. Fusion* 55 (2015)

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