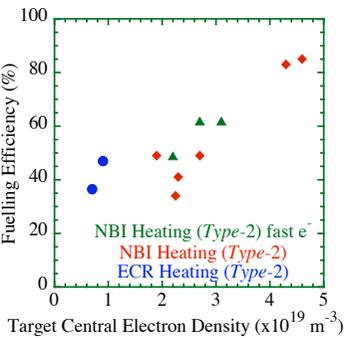
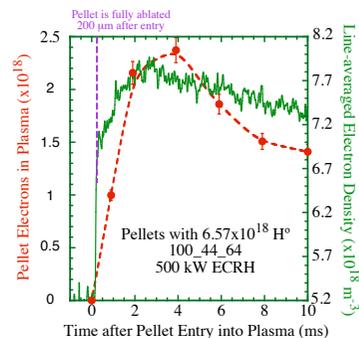
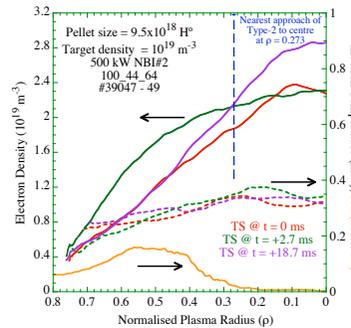
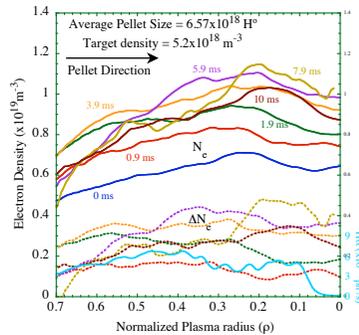
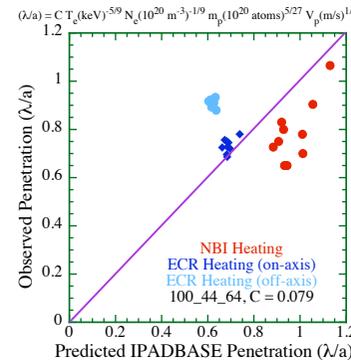
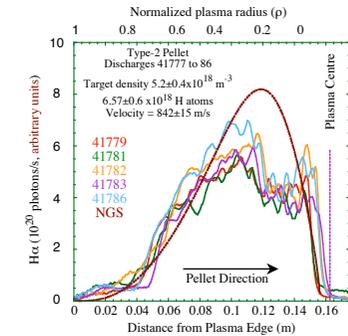


Plasma Core Fuelling by Cryogenic Pellet Injection in the TJ-II Stellarator

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Summary

- Pellet penetration depths and ablation profiles for TJ-II are in reasonable agreement with IPADBASE predictions and in good agreement with NGS based modelling, respectively, for both ECRH and NBI.
- Radial particle deposition is well reflected by the Balmer H_α ablation profile. The radial offset between both is minimal for these LFS injections.
- Full particle distribution about the plasma occurs ~4 ms after injection.
- Subsequently, deposited pellet particles undergo partial diffusion, with enhanced central confinement, arising from neoclassical transport.
- Comparison between net electron gain and pellet particle content gives fuelling efficiency. The tendency observed for fuelling to increase with target plasma density.
- For future studies we need to tailor better pellet size to target plasma parameters (diameter, density, temperature).