Density profiles in low collisionality FTU plasmas

C.Mazzotta[1], G. Pucella[1], O. D'Arcangelo[1], O. Tudisco[1], D. Carnevale[2], B. Esposito[1], E. Giovannozzi[1] and the FTU team*

[1]*ENEA, Fusion and Nuclear Safety Department, C. R. Frascati, Via E. Fermi 45, 00044 Frascati (Roma), Italy*

[2]*Dipartimento di Ingegneria Civile e Ingegneria Informatica, Università di Roma Tor Vergata, Viale del Policlinico 1, 00133 Roma, Italy*

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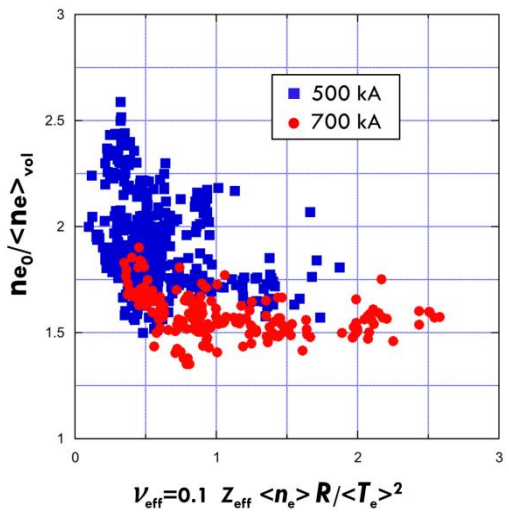
FTU offers the unique opportunity to explore a broad range of collisionality [1] expressed as $\nu_{eff} = 0.1\ Zeff\ \langle n_e \rangle\ R\ /\ \langle T_e \rangle^2$.

This work is devoted to study the dependence of the electron density profiles and peaking in a low collisionality regime, more interesting for comparison with other tokamaks [2]. With respect to those indeed, FTU features a wider scale of magnetic fields and densities. This allows to analyse the behaviour of the electron density profiles as a function of magnetic field and plasma current, investigating also more factors, such as: wall conditioning, plasma temperature.



Density peaking as a function of the effective collisionality, at different plasma current (color code) of pulses at toroidal fields B_T = 6 and 7 T.

[1] C. Mazzotta et al., *Highly collisional regimes in FTU*. Proceedings of the 44th EPS Conference on Plasma Physics, Belfast, Northern Ireland (UK). Paper P2.179 (2017). Vol. 41F ISBN: 979-10-96389-07

[2] C. Angioni et al., Plasma Phys. Control. Fus. **51** (2009) 124017