FIRST-PRINCIPLE BASED MULTI-CHANNEL INTEGRATED MODELLING IN SUPPORT TO THE DESIGN OF THE DIVERTOR TOKAMAK TEST FACILITY

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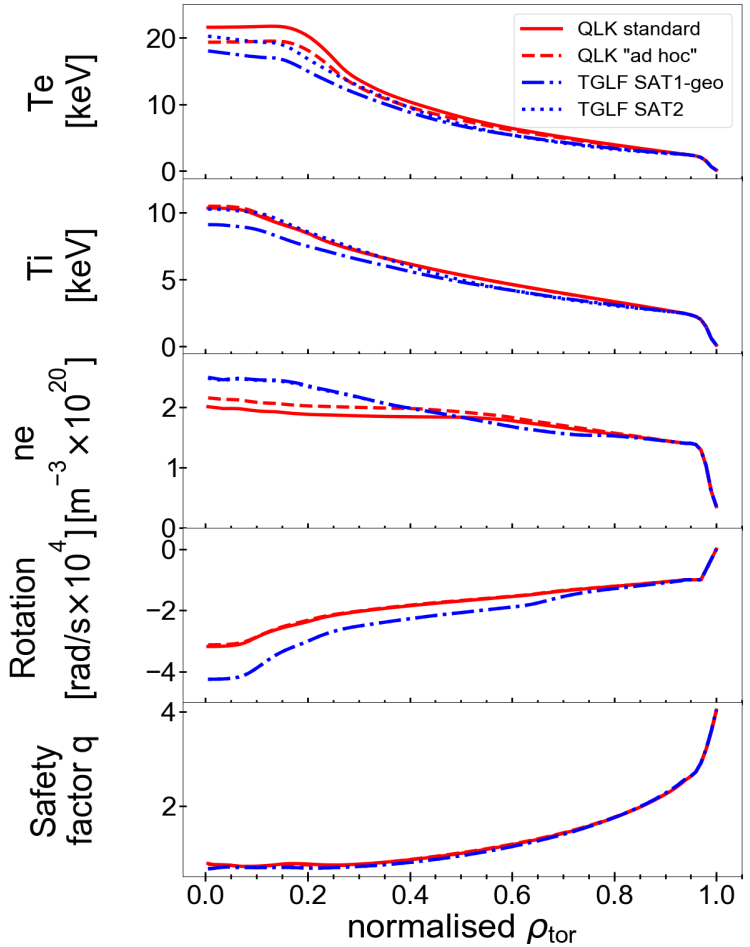
- Integrated steady-state simulations of DTT scenarios using JINTRAC or ASTRA and the first principle quasi-linear transport models QuaLiKiz and TGLF are now available to support the DTT design and the development of a scientific work-programme

- TGLF and QLK give similar predictions in the region ρ_{tor} >0.4, whilst in the inner TEM dominated region TGLF has to be retained as more reliable, according to gyro-kinetic simulations.

- The device performances with the chosen heating mix according to TGLF SAT1geo are

NBI energy/ power	ECRH Power	ICRH Power	τ_E incl.Prad/ escl. Prad	H98Y	β_{pol} $therm$ /tot	Wfast / Wth	T_{e0} / T_{i0}	n_{e0}	DD neutrons
500 keV 10 MW	33.6 MW	8 MW	0.25 s 0.43 s	0.95	0.48 / 0.51	6.5%	18 / 9 keV	2.5 10^{20} m^{-3}	1.29e17 s^{-1}



Radial profiles of T_e, T_i, n_e, toroidal rotation and safety factor for DTT full power option D scenario using 4 quasi-linear models