

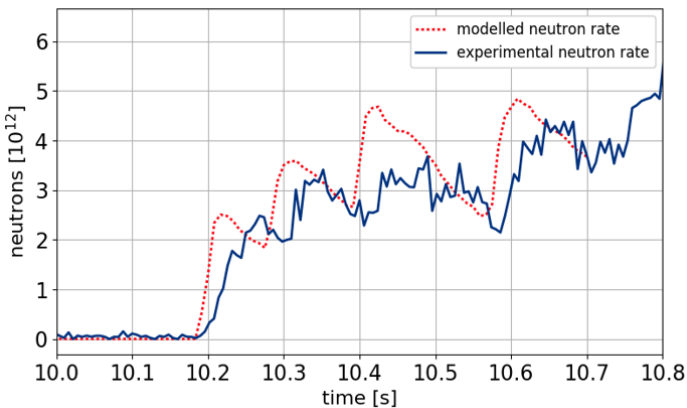
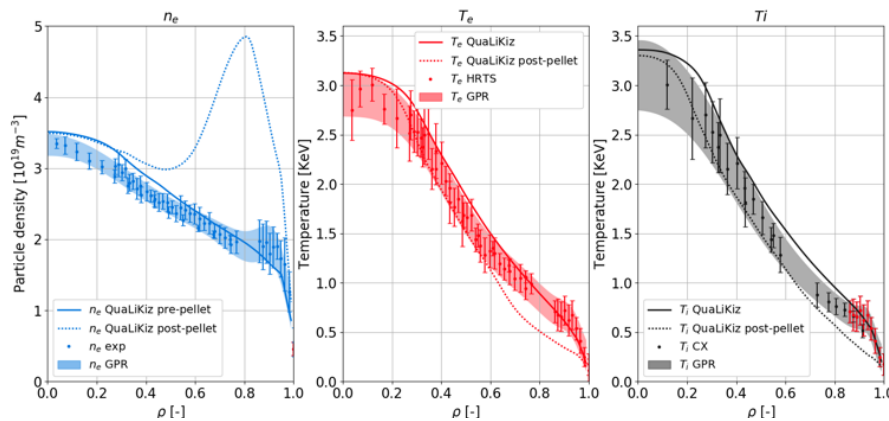
Extensive QuaLiKiz reduced turbulence model validation recently achieved in integrated modelling



J.Citrin (DIFFER, NL), C. Bourdelle, Y. Camenen, F J Casso, X. Garbet, A. Ho, F. Jenko, F. Koechl, P. Mantica, M. Marin, K.L. van de Plassche, G. Snoep, C. Stephens and JET contributors

QuaLiKiz references: Bourdelle PPCF 2016, Citrin PPCF 2017, arxiv.org/abs/2103.10569, www.qualikiz.com

JINTRAC-SANCO-QuaLiKiz simulation of multiple pellet cycles in mixed-isotope JET plasma. Fast penetration of D reproduced [Marin NF 2021]



- JINTRAC simulations with QuaLiKiz can predict $j, T_e, T_i, n_D, n_T, n_{imp}, v_{tor}$ simultaneously. Key for investigating dynamic interaction of transport channels, sources and sinks.
- Simulations applied for transport physics interpretation, “Predict First” scenario prediction and optimization including extrapolation to JET-DT
- QuaLiKiz databases used to train neutral-network (NN) surrogate model. $\times 10^5$ faster than QuaLiKiz, near-realtime [van de Plassche PoP 2020, Ho PoP 2021]. Exciting new avenues for scenario development and control-oriented simulations