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Main ion charge exchange spectroscopy on JET in preparation for the DT campaign[1] BARTOSZ LOMANOWSKI, EPHREM DELABIE, Oak Ridge National Laboratory, ALEX THORMAN, SHEENA MENMUIR, EDWARD LITHERLAND-SMITH, CCFE, Culham Science Centre, THEODORE BIEWER, CHRISTOPHER KLEPPER, Oak Ridge National Laboratory — Due to the reduction in intrinsic carbon charge exchange (CX) emission following the changeover to the beryllium/tungsten JET ITER-like wall, alternative methods have been deployed for measuring the core ion temperatures: i) injection of extrinsic impurities, such as neon, at a cost of increased fuel dilution; and ii) analysis of D-alpha CX emission from the main fuel ions. This work presents extensive validation efforts towards routine high-quality profiles of T_i and v_{tor} from a recently commissioned main ion CX diagnostic. The system shares sightlines with the Ne CX spectrometers on two opposing views of the neutral beams, allowing for comparisons between the obtained datasets. Modelling shows a small (<3%) impact on T_i due to spatial averaging effects, whereas the CX cross-section effects could lead to an underestimation of T_i by about 10% for T_i approaching 10 keV. The data quality implications on T_i, ∇T_i, T_i/T_e and v_{tor} on the physics outputs from core transport power balance analysis are presented in the context of preparations for high P_{fus} DT operations in 2020.

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