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Modelling of ICRF heating effects on the evolution of fast ion transport in plasmas with MHD instabilities¹ A. A. TEPLUKHINA, F. M. POLI, M. PODESTA, N. BERTELLI, Princeton Plasma Physics Laboratory, Princeton, USA, YE. O. KAZAKOV, LPP-ERM/KMS, Brussels, Belgium, JET CON-TRIBUTORS TEAM² — In the present research work we will analyse fast ion transport under sawtooth activity in case of joint ICRF and NBI heating. JET experiments on the three-ion H-(D-NBI)-D heating scheme (Y. Kazakov, et al, 2017) Nature Phys. 13 973) have been chosen for the analysis as they clearly show strong variations in the sawtooth period depending on the NBI and ICRF heating scenarios. The sawtooth period depends on the fast ions presence in the plasma core, as well as the neutron rate that is strongly affected by the fast ion distribution. The TRANSP code simulates plasmas in interpretative and predictive modes. A reduced model is used to estimate the effect of low-n MHD instabilities like the sawtooth activity on fast ion transport (M. Podesta, et al, 2014 Plasma Phys. Control. Fusion 56 p. 055003). Interaction between fast ions and RF waves is taken into account with the RF 'kick' operator. Also, we will investigate effects of ICRF-NBI synergy on the fast ion distribution. In particular, we will demonstrate simulation results for JET plasmas with increasing complexity of the physical setup.

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