Abstract Submitted
for the DPP20 Meeting of
The American Physical Society

Features of energetic particle transport in the after-glow phase of the JET plasma discharges[1] A. A. TEPLUKHINA, F. M. POLI, M. PODESTA, P. J. BONOFIGLO, J. YANG, Princeton Plasma Physics Laboratory, M. SERTOLI, N. C. HAWKS, D. L. KEELING, CCFE, UK, C. S. COLLINS, General Atomics, R. J. DUMONT, CEA, IRFM, France, JET CONTRIBUTORS TEAM — Reliable projections from existing JET DD plasmas are required to develop a scenario allowing to observe alpha-particle driven modes in DT plasmas (R. J. Dumont et al, 2018 Nucl. Fus. 58 082005). Favourable conditions to observe Alfven Eigenmodes (AE) driven by alpha particles include reducing mode damping by beam ions and maintaining minimum q at high values to destabilize modes. We focus on optimization of the JET NBI heating scheme to ensure fast slowing down of beam ions along with elevated q profiles. With the TRANSP code, we analyse the after-glow phase of JET DD high performance plasma discharges. Uncertainties in computed plasma parameters are assessed depending on modelling assumptions. Modelling of fast ion transport is improved by including orbital dependence of transport coefficients computed by the reduced "kick" model (M. Podestà et al, 2014 PPCF 56 055003). TRANSP simulation results are the starting point for investigation of AE destabilization in the planned JET DTE2 discharges and linear analysis of AE stability with the NOVA-K code.

[1]This material is supported by the U.S. DOE, OS OFES, under contract number DE-AC02-09CH11466, and the EUROfusion Consortium with Euratom funding under grant agreement No 633053.

Anna Teplukhina
Princeton Plasma Physics Laboratory

Date submitted: 25 Jun 2020 Electronic form version 1.4