

Abstract Submitted  
for the DPP07 Meeting of  
The American Physical Society

**Fast Particle Losses due to NTMs and Magnetic Field Ripple<sup>1</sup>** E. STRUMBERGER, S. GUENTER, E. SCHWARZ, C. TICHMANN, Max-Planck-Institut fuer Plasmaphysik, ASDEX UPGRADE TEAM — We performed a detailed numerical study for the interaction between fast particles and large scale magnetic perturbations and toroidal field ripple. In particular we focussed our study on the losses of fast ions created by neutral beam injection (NBI) for an ASDEX Upgrade discharge with neoclassical tearing mode (NTM) activity. For these investigations we used as an input an equilibrium carefully reconstructed from experimental data. The ripple is self-consistently included by a 3D, free-boundary equilibrium computation. The magnetic islands caused by (2,1) NTM are introduced by a field perturbation superimposed to the equilibrium magnetic field. Experimental data have been used to reproduce the size and location of those islands numerically. Starting from a realistic seed distribution, the guiding centres of about 100000 fast ions are traced up to a given time limit, or until they hit plasma-facing structures. A detailed analysis of the particle trajectories will provide important information of the underlying loss mechanisms such as: i.) prompt losses of passing particles caused by drift island formation, and ii.) losses of trapped particles due to stochastic diffusion.

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Date submitted: 14 Jul 2007

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