

Abstract Submitted
for the DPP20 Meeting of
The American Physical Society

Energetic trapped ion losses driven by resonant NTMs HUGO FERRARI, CONICET and CNEA-CAB, Bariloche, Argentina, RICARDO FARENGO, IB-UnCuyo and CNEA-CAB, Bariloche, Argentina, PABLO GARCIA-MARTINEZ, CONICET, Bariloche, Argentina, CESAR CLAUSER, PPPL, Princeton NJ 08543, USA — The (2,1) neoclassical tearing mode (NTM) has been proposed as a candidate to explain the larger than expected losses of high energy ions produced during neutral beam injection in ASDEX-U (1). Although the numerical simulations performed so far to study the effect of NTMs on energetic ions have reproduced several features observed in experiments, the agreement is not completely satisfactory. In this work we study the effect of NTMs on the confinement of energetic ions produced by NBI injection using FOCUS (2), a full orbit code that includes the time dependent perturbed electric and magnetic fields during NTM instabilities. To calculate the perturbed fields a reconstruction technique that includes the experimental information available (3,4) is employed. The main result of this study is that when the frequency of the NTM matches the precession frequency of the trapped particles, the losses significantly increase. Simulations also show that the main losses correspond to trapped particles. (1) M. Garcia-Munoz et. al., Nucl. Fus. 47, L10 (2007). (2) C. F. Clauser et al. Comput. Phys. Comm. 234, 126 (2019). (3) R. Farengo et al, Plasma Phys. Control. Fusion,025007 (2012). (4) V. Igochine et al, Nucl. Fus. 43 1801 (2003).

Hugo Ferrari
CONICET and CNEA-CAB, Bariloche, Argentina

Date submitted: 01 Jul 2020

Electronic form version 1.4