

Abstract Submitted  
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**Internal Kink Stability and Its Relation to Tokamak Sawteeth<sup>1</sup>**

A.D. TURNBULL, M. CHOI, L.L. LAO, General Atomics, E.A. LAZARUS, ORNL, N. GORELENKOV, PPPL — Analysis of sawtooth cycles using the Porcelli model [1] for specific DIII-D discharges shows that several features of the stability do not follow the conventional picture. Notably, the ideal stability does not necessarily degrade during the ramp as the axis  $q$  drops. Instead, the stabilizing contributions are weakened largely due to the changing equilibrium conditions. The Porcelli and NOVA-K [2] models are compared against the experiments. The fast particle stability contribution from NOVA-K is sensitive of varying pitch angle distribution. Yet, using reconstructed equilibria, the simpler Porcelli model yields results in agreement with experiment. This is investigated by studying the dependence of the NOVA-K results on the distribution. Accurate modeling of the actual fast ion distribution is key and a method for obtaining this from the limited statistics of a Monte-Carlo simulation is described.

[1] F. Porcelli, et al., Plasma Phys. Control. Fusion 38 (1996) 2163.

[2] C.Z. Cheng, Physics Reports 211 (1992) 1.

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