

Abstract Submitted
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DIII-D Pellet ELM Modeling Using M3D-C1¹ S.J. DIEM, ORNL, N. FERRARO, PPPL, L. BAYLOR, ORNL — ELM pacing via rapid small deuterium pellet injection is being studied on various fusion experiments as a method to reduce the peak heat loads from ELMs on PFCs. Modeling of pellet ELM interactions is required to understand the mechanisms behind ELM triggering and scale the results from current experiments to larger scale devices such as ITER. M3D-C1, a code for solving the linear or non-linear extended-MHD equations in toroidal geometry, is currently being used for modeling pellet ELM triggering in DIII-D ITER-like plasmas. Initial M3D-C1 results run in linear mode show that the localized perturbation due to the pellet destabilizes peeling-ballooning modes. Calculations of linear peeling-ballooning stability as a function of the pellet size and deposition will be presented and compared to data from ITER-like plasma experiments on DIII-D. Additionally, a scan of the pellet perturbation size threshold for ELM triggering and nonlinear calculations of the expansion of an injected density cloud will be presented.

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