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Modeling ELM Pellet Pacing with M3D-C[11] S.J. DIEM, ORNL, N. FERRARO, PPPL , L. BAYLOR, ORNL — M3D-C[1], 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-C[1] results run in linear mode show that the localized perturbation due to the pellet destabilizes peeling-ballooning modes. For these simulations the pellet was modeled as a 2D density ring perturbation and the total pressure was kept constant. Calculations of linear peeling-ballooning stability as a function of pellet size and deposition have shown for an initial number of particles = 4e17, only $n_{tor} = 20$ is unstable. Increasing the number of particles to 1e19 leads to unstable edge modes at the pellet ablation location, suggesting that the 2-D pellet density ring underestimates the effects of the pellet. Linear simulations also suggest that the destabilization seems to be a resistive effect. Placing the density perturbation further inside the pedestal destabilizes $n_{tor} > 10$. Recent M3D-C[1] modeling efforts have focused on 3D, 2-fluid nonlinear simulations for ELM pellet pacing.

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S.J. Diem
Oak Ridge National Laboratory

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