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Axisymmetric Modeling of a Tokamak Edge with the Continuum Gyrokinetic Code COGENT[1] RONALD COHEN, M. DORF, M. DORR, T.D. ROGNLIEN, J. HITTINGER, J. COMPTON, LLNL, P. COLELLA, D. MARTIN, P. MCCORQUODALE, LBNL — COGENT is a continuum gyrokinetic code being developed by the Edge Simulation Laboratory for edge plasmas. The code is distinguished by the use of a fourth-order finite-volume (conservative) discretization combined with arbitrary mapped multiblock grid technology (nearly field-aligned on blocks) to handle the complexity of divertor geometry without loss of accuracy. COGENT is written in parallel velocity - magnetic moment coordinates, and includes a number of options for collision models. In the present work we make use of a closed-flux-surface version of the code to investigate the influence of a strong self-consistent radial electric field (characteristic of a tokamak edge under H-mode conditions) on the neoclassical transport and decay of geodesic acoustic modes. In addition, we present initial simulations performed with a divertor version of the code exploring the effects of ion orbit losses on macroscopic flows in the edge and scrape-off layer.

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