Abstract Submitted
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Simulation of a tokamak edge plasma with the kinetic code COGENT[1] M. DORF, Lawrence Livermore National Laboratory, R. COHEN, Retired, M. DORR, J. HITTINGER, T. ROGNLIEN, Lawrence Livermore National Laboratory, P. COLELLA, D. MARTIN, P. MCCORQUODALE, Lawrence Berkeley National Laboratory — Progress on the development of the continuum gyrokinetic code COGENT for edge plasma simulations is reported. The COGENT code models an axisymmetric gyrokinetic equation coupled to the long-wavelength limit of the gyro-Poisson equation. COGENT is distinguished by application of fourth-order conservative discretization, and mapped multiblock grid technology to handle the geometric complexity of the tokamak edge. The code has also a number of model collision operator options, which have been successfully verified in neoclassical simulations. Our recent development work has focused on incorporation of the full (nonlinear) Fokker-Planck collision model. The implementation of the Fokker-Plank operator is discussed in detail, and the results of the initial verification studies are presented. In addition, we report on progress and status of the newly available divertor version of the COGENT code that includes both closed and open magnetic field line regions and a model for recycled neutral gas.

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