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Continuum Gyrokinetic Simulations of Turbulence in a Model Tokamak Scrape-Off Layer for NSTX-like Parameters[1] GREGORY W. HAMMETT, Princeton Plasma Physics Laboratory, ERIC L. SHI, LLNL, TESS N. BERNARD, General Atomics / ORAU, MANAURE FRANCISQUEZ, MIT, AMMAR HAKIM, NOAH R. MANDELL, PPPL — We review the first continuum gyrokinetic simulations of turbulence in a model of the tokamak scrape-off layer (SOL) region, using the Gkeyll code [1, 2]. These initial simulations were done with a simple helical magnetic model of the SOL, which includes key effects such as bad curvature drive and model sheath boundary conditions. (General geometry extensions are under way.) NSTX-like parameters were used. Gkeyll is a full-F code using a version of discontinuous Galerkin algorithms that conserve energy exactly for Hamiltonian problems (in the continuous time limit). It also has a full Vlasov-Maxwell solver. The present model for the sheath interactions is discussed in the simple case of magnetic fields with normal incidence on end plates. It uses the long-wavelength gyrokinetic Poisson Eq. to include polarization effects in the plasma and allows for currents flowing through the sheath and walls. Dependence of the turbulence and resulting divertor heat-flux width on connection length is investigated. [1] E.L. Shi, Princeton Ph.D. Dissertation 2017, https://arxiv.org/abs/1708.07283 [2] E.L. Shi, et al. Phys. Plasmas 2019 https://doi.org/10.1063/1.5074179

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