

Abstract Submitted  
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**Gyrokinetic Magnetic Fluctuations in an ELM Heat Pulse Scrape-Off-Layer Test Problem**<sup>1</sup> G.W. HAMMETT, A.H. HAKIM, E.L. SHI, I.G. ABEL, T. STOLTZFUS-DUECK, Princeton Plasma Physics Laboratory and the Max-Planck/Princeton Center for Plasma Physics — We have applied an electromagnetic gyrokinetic-based model to simulate parallel plasma transport in the scrape-off layer (SOL) to a divertor plate, employing the Discontinuous-Galerkin code Gkeyll. We focus on a test problem that has been studied previously,<sup>2</sup> using parameters chosen to approximate a heat pulse driven by an edge localized mode (ELM) in JET. With the use of the gyrokinetic quasineutrality equation and logical sheath boundary conditions, spatial and temporal resolution requirements are no longer set by the electron Debye length and plasma frequency. This test problem also helps illustrate some of the physics contained in the Hamiltonian form of the gyrokinetic equations and some of the numerical challenges in developing an edge gyrokinetic code. In particular, we will describe some of the special techniques needed to handle magnetic fluctuations in this nonlinear gyrokinetic problem.

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<sup>2</sup>E. Havlíčková, W. Fundamenski, D. Tskhakaya, et al., PPCF 54, 045002 (2012)

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