

Abstract Submitted
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Benchmarking Chapman-Enskog-Like (CEL) Kinetic Results in NIMROD¹ JOSEPH JEPSON, jjepson2@wisc.edu, CHRIS HEGNA, University of Wisconsin - Madison, ERIC HELD, Utah State University, BRENDON LYONS, General Atomics — In the simplified regime of axisymmetric geometry and fixed magnetic field, steady-state results for the neoclassical, poloidal flow constant are compared between NIMROD and DK4D [1]. These quantities are obtained by evolving the Chapman-Enskog-like drift kinetic equation (CEL-DKE) [2] in NIMROD to steady state, and then taking appropriate moments of the non-Maxwellian part of the distribution. The full CEL approach differs from a traditional delta-f approach in that the lowest-order Maxwellian evolves according to n , T , and V , which may be advanced using NIMROD's fluid model. The CEL-DKE results are also compared to analytics, as well as to previous results obtained using NIMROD's delta-f DKE implementation [3]. Future work will include using the CEL implementation in NIMROD to better understand the role of island formation in ELM suppression by RMPs. [1] B. C. Lyons, S. C. Jardin, and J. J. Ramos, *Phys. Plasmas* **22**, 056103 (2015). [2] J. J. Ramos, *Phys. Plasmas* **18**, 102506 (2011), [3] E. D. Held, et al., *Phys. Plasmas* **22**, 032511 (2015).

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