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Continuum kinetic poloidal flow damping verification with NIMROD[1] JOSEPH R JEPSON, CHRIS C HEGNA, University of Wisconsin - Madison, ERIC D HELD, Utah State University — Close agreement between numerics and analytics has been obtained in delta-F drift kinetic, poloidal flow damping calculations with NIMROD. In these calculations, an initial kinetic distortion is imposed on an axisymmetric equilibrium, which provides an initial poloidal flow which damps in time. Steady state poloidal flows differ from analytical results [1] by only a few percent, and time-dependent poloidal flow damping rates also agree with analytics. Similar calculations using a Chapman-Enskog-like (CEL) approach [2] have also been undertaken, and results for sound wave damping are presented. The Chapman-Enskog-like approach differs from delta-F since the lowest-order Maxwellian evolves with the n, T, and **V** velocity moments handled using NIMRODs fluid model. This approach has an added benefit that the electric field, which appears in the momentum equation, can be specified using Ohms law. Future work will include using the CEL implementation in NIMROD to study the effects of resonant magnetic perturbations (RMPs) in Tokamaks. [1] S.P. Hirshman and D.J. Sigmar 1981 Nucl. Fusion **21** 1079. [2] J. J. Ramos, Phys. Plasmas **18**, 102506 (2011).

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Joseph Jepson
University of Wisconsin - Madison

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