Abstract Submitted
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Conservative Recovery Discontinuous Galerkin Scheme for the Fokker-Planck Collision Operator[1] PETR CAGAS, Virginia Tech, AMMAR HAKIM, Princeton Plasma Physics Laboratory, JAMES JUNO, University of Maryland, BHUVANA SRINIVASAN, Virginia Tech — Continuum kinetic plasma models are used to study plasmas by directly evolving ion and electron distribution functions using the Vlasov equation along with Maxwell's equations. In this work, a novel implementation of the Fokker-Planck operator for collisions is presented. It is based on the Rosenbluth formulation where the increments $\langle \Delta v_\mu \rangle$ and $\langle \Delta v_\mu \Delta v_\nu \rangle$ are calculated as the derivatives of the Rosenbluth potentials. Recovery of higher-order representation and computer algebra systems are highly utilized to calculate the derivatives and integrals in the discontinuous Galerkin algorithm. These two key elements allow for a high-order, efficient, and conserving scheme.

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