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## **Eulerian Finite-Difference Vlasov Solver with a Non-Uniform Momentum Grid**

*Thursday, 10 November 2022 13:30 (15 minutes)*

An Eulerian finite-difference method solving the Vlasov equation is developed with a static, non-uniform momentum grid. The computational cost of this transformation differs negligibly from the uniform case with the same number of grid points. A general grid parametrization is tested against classic instabilities and driven cases and is found to provide significant efficiencies over the uniform grid case. This technique allows for the distribution of computational resources based on the relative importance of kinetic activity in phase-space while preserving variationally conserved quantities from the formal bracket. This method can be readily extended to multiple dimensions and is compatible with dynamically adapting the momentum grid.

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