Abstract Submitted
for the DPP20 Meeting of
The American Physical Society

FARRSIGHT: A Forward Adaptively Refined and Regularized Semi-Lagrangian Integral Green's function Hierarchical Tree-code accelerated method for the Vlasov-Poisson system[1] RYAN SANDBERG, ROBERT KRASNY, ALEC G.R. THOMAS, Univ of Michigan - Ann Arbor — We present a new forward semi-Lagrangian particle method for the Vlasov-Poisson (VP) system. Recent methods for solving the VP system include deformable particles and high-order and/or discontinuous-Galerkin Eulerian methods. In contrast to these, we do not use any operator splitting and obtain the electric field by summing regularized pairwise particle interactions using a hierarchical treecode. We use remeshing and adaptive mesh refinement to maintain an efficient representation of phase space. We benchmark on several standard test cases including Landau damping and the two-stream instability.

[1]AFOSR grant FA9550-19-1-0072

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Date submitted: 29 Jun 2020 Electronic form version 1.4