The Kinetic Implicit Fluid method for collisionless plasma

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The kinetic implicit fluid method solves fluid-Maxwell equations implicitly with kinetic closure. This simple framework enables a high-order-accurate unlimited-species relativistic Vlasov solver with no essential time step restriction that is fully conforming in physical space, with exact conservation of mass, momentum, energy, and charge. Particle velocity is defined relative to fluid velocity to maintain consistency with momentum conservation and scaled to enforce consistency with energy conservation. Particle masses are scaled to enforce consistency with mass and charge conservation. Slaved evolution of face-normal fluxes followed by correction is used to maintain divergence constraints.