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Resolving Controversies Concerning the Kinetic Structure of Multi-Ion Plasma Shocks[1] BRETT KEENAN, ANDREI SIMAKOV, LUIS CHACON, WILLIAM TAITANO, Los Alamos National Laboratory — Strong collisional shocks in multi-ion plasmas are featured in several high-energy-density environments, including Inertial Confinement Fusion (ICF) implosions. Yet, basic structural features of these shocks remain poorly understood (e.g., the shock width's dependence on the Mach number and the plasma ion composition, and temperature decoupling between ion species), causing controversies in the literature; even for stationary shocks in planar geometry [cf., Ref.[2] and Ref.[3]]. Using a LANL-developed, high-fidelity, 1D-2V Vlasov-Fokker-Planck code (iFP)[4], as well as direct comparisons to multi-ion hydrodynamic simulations and semi-analytic predictions, we critically examine steady-state, planar shocks in two-ion species plasmas and put forward resolutions to these controversies.

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