Abstract Submitted
for the DPP20 Meeting of
The American Physical Society

**Particle Trapping in a Large-amplitude Ion Acoustic Wave in the Presence of Interspecies Collisions**[1] RICHARD BERGER, THOMAS CHAPMAN, WILLIAM ARRIGHI, ANDRIS DIMITS, Lawrence Livermore Natl Lab, JEFFREY BANKS, RPI, Troy, NY, STEPHAN BRUNNER, EPFL, Lausanne, Switzerland — Trapping of particles in large-amplitude Ion Acoustic Waves is a ubiquitous process in the nonlinear evolution of many plasma instabilities such as Stimulated Brillouin Scattering (SBS), Collisionless Shocks, and Ion Streaming Instabilities. Recent work[1] has proposed that multi-species plasmas composed of heavy, high-Z and light low-Z ions can be used in ICF experiments to suppress the growth of potentially damaging levels of SBS without significant loss of the radiation drive in indirect-drive hohlraums. This suppression relies on the validity of using linear Landau damping of the IAW by the light ions. However, if the SBS-driven IAW can trap the light ions, the suppression of SBS could be reduced. Here, we present kinetic simulations with NIF-relevant plasma conditions that show the scattering of light ions on the heavy ions maintains the Maxwell-Boltzmann form of the ion distribution and thereby the linear Landau damping assumption.
[1] Berger,*et al* PoP 26,012709(2019)

[1]This work was performed under the auspices of the U.S. Department of Energy by Lawrence Livermore National Laboratory under Contract DE-AC52-07NA27344 and funded by the Laboratory Research and Development Program project 17-ERD-081. Computing support came from the LLNL Institutional Computing Grand Challenge program

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Date submitted: 01 Jul 2020 Electronic form version 1.4