

Abstract Submitted
for the DPP10 Meeting of
The American Physical Society

The Onset of Inflation and the Effects of Seed Pulses on SRS¹ IAN ELLIS, Lawrence Livermore National Laboratory and University of California, Los Angeles, DAVID STROZZI, Lawrence Livermore National Laboratory, BENJAMIN WINJUM, FRANK TSUNG, JAY FAHLEN, THOMAS GRISMAYER, WARREN MORI, University of California, Los Angeles — Using the PIC code OSIRIS, we performed 1D simulations with a continuous pump and a counter-propagating seed to study the onset of kinetic inflation in backward Stimulated Raman Scattering (SRS) for ICF-relevant plasmas. When we used a continuous seed, we found that the onset of inflation was sharply determined by the pump intensity and the seed wavelength. We performed further simulations using seed pulses of varying wavelength, intensity, and duration. When using pulses of short duration we observed a linear gain spectrum similar to that predicted by linear theory but slightly blue-shifted. This blue-shift is partly explained by relativistic and finite-size particle effects. We observed inflation-like behavior of the pump from the residual plasma wave created by the seed a sufficient time after the seed exited the system. As we increased the seed duration, the inflation-like behavior began to occur while the seed was still in the system.

¹Prepared by LLNL under Contract DE-AC52-07NA27344 and by UCLA under Grant DE-FG52-09NA29552.

Ian Ellis
LLNL and UCLA

Date submitted: 16 Jul 2010

Electronic form version 1.4