

Abstract Submitted
for the DPP08 Meeting of
The American Physical Society

Simulations of Stimulated Raman Backscatter¹ B.J. WINJUM, J.E. FAHLEN, F.S. TSUNG, W.B. MORI, UCLA — In fully self-consistent particle-in-cell (PIC) simulations, the onset and saturation of Stimulated Raman Scattering (SRS) is quite complicated. Fully kinetic simulations (both PIC and Vlasov) have shown that inflation, nonlinear frequency shifts, trapped particle sideband instabilities, beam modes, pump depletion, plasma wave convection, rescatter, plasma length, and ion motion all play a role. We have performed an extensive array of simulations using the PIC code OSIRIS over the past several years, looking at these effects in detail. This poster will summarize the results. We will show how SRS onset is dependent on the length available for gain, how saturation depends on both the frequency shifts and pump depletion (the relative amount depends on parameters), how sidebands and beam modes affect the electron phasespace and grow significantly only after saturation, how saturated plasma waves convect as a packet and lead to Raman scatter at a shifted frequency, and how recurrence is affected by convection, shifted frequencies, and pump depletion.

¹Work supported by DOE under grant no. DE-FG52-06NA26195 and NSF grant no. NSF-Phy-0321345.

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Date submitted: 20 Jul 2008

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