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The Parameter Dependence of Reflectivity Levels in Particle-in-Cell Simulations of Stimulated Raman Scattering[1] B.J. WINJUM, J.E. FAHLEN, F.S. TSUNG, W.B. MORI, UCLA — Stimulated Raman scattering (SRS) can reflect the incident laser energy of the National Ignition Facility, but modeling SRS reflectivity in this regime is difficult due to kinetic effects. Within this context, we show the parameter dependence of SRS reflectivity over a range of electron temperatures and densities, laser intensities, and speckle lengths through 1D and 2D particle-in-cell simulations with k*lambda_D = 0.26-0.34 for the backscatter plasma wave. For constant k*lambda_D, lower electron densities have substantially lower reflectivities since SRS saturates at amplitudes for which the detuning rate due to the nonlinear frequency shift is on the order of the growth rate. Lower reflectivities are also shown for shorter speckles due to the evolution of plasma wave packets and an inflationary onset when the ratio of the speckle length to the convective gain length is $\sim$ O(1). 2D reflectivity is lower than 1D due to transverse localization of the plasma wave, but similar dependences are shown.

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