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Diffraction Limits on the Convective Stimulated Raman Scatter Threshold[1] HARVEY ROSE, New Mexico Consortium, PHILIPPE MOUNAIX, Ecole Polytechnique, Centre de Physique Theorique — Laser interaction with inhomogeneous plasma typically exhibits a "Raman gap": experiments reveal that scattered light covers a range of frequencies which at the high end corresponds to SRS from low electron densities where the combination of reduced coupling and increased Landau damping provide a cutoff at roughly the laser frequency ω_0, but SRS is *not* observed in a frequency interval that (qualitatively) abuts $\omega_0/2$, where scattered light is again observed in a narrow frequency interval which corresponds to scattering from electron densities approximately in the range 0.20 to 0.25 of critical. Several 1D mechanisms, linear and nonlinear, have been proposed to explain this Raman gap. We have found that diffractive effects on light scattered from a wide (beam width>>speckle width) speckled laser beam tend to increase the linear convective SRS intensity threshold, I_T, with increase of density. This may lead to a temperature and density regime in which I_T increases with density even though the 1D gain rate, $\sim 1 \,/\, \nu_{\,Landau}$, increases.

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