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Theory of superhot electron spectra generated by Raman scatter BRUCE LANGDON, D. STROZZI, E. WILLIAMS, R. BERGER, C. STILL, D. HINKEL, B. LASINSKI, Lawrence Livermore National Laboratory — In laser-plasma interaction (LPI) stimulated Raman scatter, electrons are accelerated by the electric field of the Langmuir decay wave, modifying the electron distribution function in the neighborhood of the phase velocity. Particle-in-cell (PIC) simulations of SRS in one or so laser speckles produce a shoulder in the distribution function that falls off rapidly at higher energy. However experimentally the energy distribution is fitted to Maxwellians extending far beyond $^1/_2 m_e(\omega/k)^2$. Nature makes Maxwellian distributions by a succession of accelerations. Passing an electron again through a similarly-oriented plasma wave seems unlikely to kick it above the trapping width unless the fast electron's direction is oblique to the plasma wave, so that $\mathrm{k} \cdot \mathrm{v}/k$ is brought within the trapping width. This deflection might be by electron-ion scattering or B fields. We consider such reheating mechanisms in plasma conditions motivated by NIF ignition targets, using multidimensional (PIC) simulations and simpler models. This work was performed under the auspices of the U.S. Department of Energy by Lawrence Livermore National Laboratory under contract No. DE-AC52-07NA27344.

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