

Abstract Submitted
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Laser-plasma instabilities under density fluctuations¹ C. REN, J. LI, R. YAN, University of Rochester — In the corona of an ICF target, laser-plasma instabilities can drive significant plasma density fluctuations. Using fluid simulations with parameters relevant to both conventional direct drive scheme and shock ignition, we show that convective stimulated Raman scattering (SRS) and two-plasmon decay (TPD) modes in the low density region can turn into absolute ones and grow beyond the convective limit under static ion density fluctuations. The TPD modes can form the first stage for hot electron generation due to their low phase velocities. The maximum absolute growth rate is $\sim 70\%$ of the corresponding homogeneous TPD growth rate, much higher than the convective growth rate without the ion density modulation. This may explain why in Particle-in-Cell simulations these modes were only found in the nonlinear stage when ion density fluctuations were present.

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