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Three-Dimensional Modeling of the Two-Plasmon–Decay Instability and Stimulated Raman Scattering Near the Quarter-Critical Density in Plasmas H. WEN, A.V. MAXIMOV, R. YAN, C. REN, J.F. MYATT, Laboratory for Laser Energetics, U. of Rochester, W.B. MORI, U. of California, Los Angeles — Three-dimensional simulations of laser–plasma interactions have been performed in the plasma region near the quarter-critical density using the particle-in-cell (PIC) code *OSIRIS*. For parameters[1] relevant to the direct-drive inertial confinement fusion experiments, two-plasmon decay (TPD) and stimulated Raman scattering (SRS) have been observed to coexist in the same region. Both instabilities contribute to the generation of fast electrons. A new fluid model including both TPD and SRS has been developed. The growth rates of absolutely unstable TPD and SRS modes in the linear regime of this model are in agreement with analytical theory.[2,3] This material is based upon work supported by the Department of Energy National Nuclear Security Administration under Award Number DE-NA0001944.

[1]R. Yan, A. V. Maximov, and C. Ren, Phys. Plasmas **17**, 052701 (2010).
[2]A. Simon *et al.*, Phys. Fluids **26**, 3107 (1983).
[3]J. F. Drake and Y. C. Lee, Phys. Rev. Lett. **31**, 1197 (1973).

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