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Effects of Local Field Modulation on the Laser-Driven Rayleigh-Taylor Instability, plasmonic effects and 3D structures ANDREA MACCHI, Istituto Nazionale Ottica, CNR, Pisa, Italy, LUCA FEDELI, FRANCESCO PEGORARO, Pisa University, ANDREA SGATTONI, Politecnico di Milano, STEFANO SINIGARDI, Bologna University — The acceleration of dense targets driven by the radiation pressure of high-intensity laser may lead to a Rayleigh-Taylor instability with rippling of the interaction surface. Using a simple model it is shown that the self-consistent modulation of the radiation pressure caused by a sinusoidal rippling affects substantially the wavevector spectrum of the instability depending on the laser polarization. In particular, the strong enhancement of the local field when the rippling period equals the laser wavelength explains why the latter is the dominant instability scale observed in several simulations. The nonlinear evolution is investigated by three dimensional simulations which show the formation of stable structure with "wall paper" symmetry.

[1] S. Sgattoni, *et al.*, *Phys. Rev. E*, **91** 013106 (2015)

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