

Abstract Submitted
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Backward Raman amplification of laser pulses in plasma with random inhomogeneities.¹ VLADIMIR MALKIN, NATHANIEL FISCH, Princeton University — Backward Raman amplification of laser pulses in plasmas to nearly relativistic intensities was already observed experimentally, but complete pump depletion by amplified pulse still was not achieved. We argue here that the complete pump depletion may be more readily achieved experimentally in plasmas having noticeable random density inhomogeneities, rather than in highly uniform plasmas which are difficult to produce. Random inhomogeneities can naturally suppress such major parasitic effects as the transverse filamentation instability and Raman back- and side-scatterings of laser pulses by plasma noise, thus enabling useful amplification through longer distances.

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