

Abstract Submitted
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Nonlinear growth and damping rates of a plasma wave¹ DIDIER BENISTI, CEA, DAM, DIF — We provide, within the same theoretical framework, a full description of the nonlinear stage of the beam-plasma instability and the derivation of the nonlinear Landau damping rate of a plasma wave. The latter issue is addressed whether the duration of the plasma pulse is long or comparable to the plasma period. Therefore, the present work generalizes previous derivations of the nonlinear Landau damping rate of an electron plasma wave [1], that were only for slowly varying waves, as those generated by Raman scattering in a laser fusion device. Such a generalization is needed to address backward Raman amplification, and to discuss how nonlinear effects may enlarge the parameter window for amplification of short wave lengths [2].

[1] D. Bénisti, D. Strozzi, L. Gremillet and O. Morice, Phys. Rev. Lett. **103**, 155002 (2009).

[2] V.M. Malkin and N.J. Fisch, Phys. Plasmas, **17**, 073109 (2010).

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