



Energetics of Landau and non-Landau linear damping

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Many papers have shown that estimating the energy exchanges in linear Langmuir waves can lead, under certain assumptions, to a continuous averaged dissipation from electric to kinetic energy, with a wave damping rate equal to the classical Landau's value γ_L . Considering the existence of non-Landau solutions evidenced in a recent paper [Belmont et al., PoP 2008], the dissipation process is revisited in a more general way. As this paper has provided one with an explicit form of the perturbed distribution function, the different energy exchanges can indeed be calculated now explicitly. It is shown that the energy calculations, when complete, are indeed in full agreement with the existence of non-Landau solutions, which means that the Landau damping rate is not unique when the initial distribution functions corresponding to the non-Landau solutions are not excluded.