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Particular initial perturbations that kill Landau damping.

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A careful examination of the kinetic theory (presented in a companion paper by Belmont et al.) of Langmuir waves shows that, while most of the initial perturbations of the electron distribution function lead to Landau damping, there exists a class of (small) perturbations that lead to other asymptotic wave behaviours. Their relevance to real plasmas is discussed. These particular waves are examined through numerical simulation with a perturbative PIC code and compared to the linear theory of Landau damping.