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Langmuir waves: Vlasov simulations and STEREO/Waves observations

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In a former paper (Briand 2005), a new model for the generation of electrostatic coherent structures was proposed by perturbing the plasma at one boundary with a spatially localized, time dependent modulation of the electron distribution function. In this first approach, the forcing was continuously applied. In the present work, we study the plasma response to different kinds of time modulated boundary perturbations (pulse and serie of pulses) of the electron distribution function. We show that phase space vortices naturally develop in all cases. We also discuss and explain the formation of Langmuir waves induced by the (non trapped) fast electrons. Comparisons between observations with STEREO/Waves instrument (TDS mode) and simulations are finally presented