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Arbitrary amplitude ion-acoustic and electron-acoustic solitons in two-ion space plasmas revisited

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In the present study we will broaden the scope of the studies in [1] by investigating why upper velocity limits occur for slow and fast ion-acoustic and electron-acoustic solitons for a plasma model composed of cool and hot ions (of equal mass) and cool and hot electrons. All species will initially be treated as adiabatic fluids. Not only will we be able to present the admissible soliton velocity ranges for much broader regions in parameter space than those found in [1], our results will also provide useful insights into the properties of the observed solitons such as whether polarity changes can be induced in the observed structures and if double layers are possible. In addition, we will establish how retaining (as opposed to neglecting) inertial effects of the hot electrons in the model affects the results.

[1] G. S. Lakhina, S. V. Singh, A. P. Kakad, F. Verheest and R. Bharuthram, *Nonlin. Process Geophys.* **15**, 903-913 (2008).

Apply to be considered for a student award (Yes / No)?

No

Level for award (Hons, MSc, PhD)?

N/A

Main supervisor (name and email) and his / her institution

N/A

Would you like to submit a short paper for the Conference Proceedings (Yes / No)?

No

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