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Forbidden gap regions in ion-acoustic solitons

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Abstract content
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Plasma models composed of one and/or two (different mass) species of inertial ions and one and/or two (different temperature) species of (inertialess) electrons (isothermal and/or non-thermal) will be considered to investigate
forbidden gap regions (stopbands) in velocity space where ion-acoustic solitons do not propagate. It has been previously found [1] that these forbidden gap regions in velocity space occur between two passband regions which support the propagation of ion-acoustic solitons. The focus of the study will be to establish which plasma models favour the existence of stopband regions but also to determine how the sizes of the stopband regions are a function of the plasma parameters.

[1] Stopbands in the existence domains of acoustic solitons, F. Nsengiyumva, M. A. Hellberg, F. Verheest and R. L. Mace. Phys. Plasmas 21 , 102301 (2014).

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