

A model for ion-acoustic solitary waves with streaming non-Maxwellian electrons in space plasmas

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Solitons are nonlinear solitary structures and are integral part of space plasmas. Such nonlinear structures, accompanied by streaming electrons are frequently observed by various satellites in different regions of near Earth plasmas such as Earth's bow shock, magnetopause, auroral zone, etc. In this paper, we present a fluid model consisting streaming non-Maxwellian electrons along the magnetic field and derived the Sagdeev potential for fully nonlinear fluid equations. We found that compressive solitons can be developed in such a plasma. The results from our model can be used to interpret solitary structures in space plasmas when there is streaming electron obeying the non-Maxwellian distributions