

## عنوان مقاله:

Dynamic structures of nonlinear ion acoustic waves in a nonextensive electron–positron–ion plasma

## محل انتشار:

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## خلاصه مقاله:

The dynamic structures of ion acoustic waves in an unmagnetized plasma with  $q$ -nonextensive electrons and positrons are investigated applying the bifurcation theory of planar dynamical systems through direct approach. Model equations are transformed to a planar dynamical system using a traveling wave transformation. Using the bifurcations of planar dynamical system, the existence of solitary and periodic waves is shown. We have obtained new analytical forms for solitary and periodic waves depending on parameters  $p$ ,  $q$ , and  $v$ . Considering an external periodic perturbation, the chaotic behavior of nonlinear ion acoustic waves is presented. Depending upon different regimes of the nonextensive parameter  $q$ , the effect of  $q$  is shown on chaotic motions of ion acoustic waves with fixed values of other parameters  $p$ , and  $v$ . It is seen that the unperturbed system has the solitary and periodic wave solutions, but the perturbed dynamical system has chaotic motions for same values of parameters  $p$ ,  $q$ , and  $v$ .

## کلمات کلیدی:

Solitary wave Periodic wave Chaotic behavior Bifurcation theory

## لینک ثابت مقاله در پایگاه سیویلیکا:

<https://civilica.com/doc/763611>

