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Mathematical methods and solitary wave solutions of three-dimensional Zakharov-Kuznetsov-Burgers equation in dusty plasma and its applications

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A new technique for solving nonlinear complex physical phenomena, arising in different fields of science, called Modified extended mapping method is investigated. The method is applied to three dimensional Zakharov-Kuznetsov-Burgers (ZKB) equation for the dust-ion acoustic waves in dusty plasmas. As a result, the exact and solitary wave solutions (which represent electric field potential), electric and magnetic fields and quantum statistical pressure for ZKB equation are obtained with the aid of mathematics. These new exact solitary wave solutions are expressed in the forms of hyperbolic, trigonometric and rational functions. The graphical representations of the electric field potential and electric and magnetic fields are shown. These results demonstrate the efficiency and precision of the method that can be applied to many other mathematical physical problems.

Biography

Abdullah has completed his BS(4 year) degree in the age of 22 years from department of Mathematics, University of Malakand, Chakdara, Dir(L), KPK, Pakistan. Currently he is doing Master's Degree from Faculty of Science, Jiangsu University, Zhenjiang, Jiangsu, PR China. He has published 5 papers and has submitted 3 more papers.

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