2003 Vol.39 No.4 pp.395-400 DOI:

An Extension of Mapping Deformation Method and New Exact Solution for Three Coupled Nonlinear Partial Differential Equations

LI Hua-Mei

College of Mathematics, Physics and Information Science, Zhejiang Normal University, Jinhua 321004, China
(Received: 2002-9-2; Revised:)

Abstract: In this paper, we extend the mapping deformation method proposed by Lou. It is used to find new exact travelling wave solutions of nonlinear partial differential equation or coupled nonlinear partial differential equations (PDEs). Based on the idea of the homogeneous balance method, we construct the general mapping relation between the solutions of the PDEs and those of the cubic nonlinear Klein-Gordon (NKG) equation. By using this relation and the abundant solutions of the cubic NKG equation, many explicit and exact travelling wave solutions of three systems of coupled PDEs, which contain solitary wave solutions, trigonometric function solutions, Jacobian elliptic function solutions, and rational solutions, are obtained.

PACS: 03.40.Kf
Key words: coupled nonlinear partial differential equations, cubic nonlinear Klein-Gordon equation, exact solution

[Full text: PDF]

Close