Extended Riccati Equation Rational Expansion Method and Its Application to Nonlinear Stochastic Evolution Equations

WANG Mei-Jiao[1] and WANG Qi[2,3]

[1] Department of Mathematics, Ningbo University, Ningbo 315211, China
[2] Department of Applied Mathematics, Dalian University of Technology, Dalian 116024, China
[3] Key Laboratory of Mathematics Mechanization, the Chinese Academy of Sciences, Beijing 100080, China

Abstract: In this work, by means of a new more general ansatz and the symbolic computation system Maple, we extend the Riccati equation rational expansion method [Chaos, Solitons & Fractals 25 (2005) 1019] to uniformly construct a series of stochastic nontravelling wave solutions for nonlinear stochastic evolution equation. To illustrate the effectiveness of our method, we take the stochastic mKdV equation as an example, and successfully construct some new and more general solutions including a series of rational formal nontraveling wave and coefficient functions' soliton-like solutions and trigonometric-like function solutions. The method can also be applied to solve other nonlinear stochastic evolution equation or equations.

[Full text: PDF]

Close