

عنوان مقاله:

A practical review of the Adomian decomposition method: computer implementation aspects

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خلاصه مقاله:

In this paper, a practical review of the Adomian decomposition method, to extend the procedure to handle the strongly nonlinear problems under the mixed conditions, is given and the convergence of the algorithm is proved. For this respect, a new and simple way to generate the Adomian polynomials, for a general nonlinear function, is proposed. The proposed procedure, provides an explicit formula to calculate the Adomian polynomials of a nonlinear function. The efficiency of the approach will be shown by applying the procedure on several interesting integro-differential problems. The Mathematica programs generating the Adomian polynomials and Adomian solutions based on the procedures in this paper are designed.

کلمات کلیدی:

Adomian decomposition method; Adomian polynomials; Nonlinear integro-differential problems; Series solution; Strongly nonlinear problems; Explicit machine computation and programs

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