

A Study on Fractional Diffusion–Wave Equation with a Reaction

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Abstract:

An analytical method for solving the fractional diffusion–wave equation with a reaction is investigated. This approach is based on the Laplace transform and fractional series method. An analytical derivation for the proposed method is presented. Examples are given to illustrate the efficiency of the method. The obtained solutions are very close to the exact solutions. Based on this study, we think that the obtained method is promising, and we hope that it can be implemented to other physical problems.

Keywords:

Diffusion–wave equation, Laplace fractional series method, reactions.