عنوان مقاله:

A numerical scheme for space-time fractional advection-dispersion equation

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خلاصه مقاله:

In this paper, we develop a numerical resolution of the space-time fractional advection-dispersion equation. We utilize spectral-collocation method combining with a product integration technique in order to discretize the terms involving spatial fractional order derivatives that leads to a simple evaluation of the related terms. By using Bernstein polynomial basis, the problem is transformed into a linear system of algebraic equations. Matrix formulation, error analysis and order of convergence of the proposed method are also discussed. Some numerical experiments are presented to demonstrate the effectiveness of the proposed method and to confirm the analytic results.

کلمات کلیدی:

Advection-dispersion equation, Space-time fractional PDE, Bernstein polynomials, Product integration, Spectral-collocation

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