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A new algorithm for solving the time-space-fractional linear telegraph equations with variable coefficients

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Abstract

In this work, a new algorithm is proposed for solving the time-space-fractional linear telegraph equations with variable coefficients and Robin boundary conditions. The fractional derivatives are described in the conformable sense. This algorithm is based on shifted Legendre polynomials of the first kind and α-Generalized method. The time-space fractional telegraph equations is reduced to a linear system of second order differential equations and the α-Generalized method is applied to solve this system. Finally, some numerical examples are presented to confirm the reliability and effectiveness of this algorithm.

Keywords: Conformable fractional calculus, α-Generalized method, Legendre polynomials, Time-space-fractional telegraph equation with variable coefficients.
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CERTIFICATE OF PARTICIPATION

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