

The conformable space-time fractional Fokas-Lenells equation and its optical soliton solutions based on three analytical schemes

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Abstract

This paper is about the study of space-time fractional Fokas-Lenells equation that describes nonlinear wave propagation in optical fibers. Three prominent schemes are employed for extracting different types of exact soliton solutions. In particular, the expa function method, the hyperbolic function method and the simplest Riccati equation scheme are investigated for the said model. As a sequela, a series of soliton solutions are obtained and verified through Mathematica. The obtained solutions are significant additions in some specific fields of physics and engineering. Furthermore, the 3D graphical descriptions are left to analyze the pulse propagation for the reader.

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