

Similarity Analytical Solutions for the Schrödinger Equation with the Riesz Fractional Derivative in Quantum Mechanics

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May 5, 2020

Abstract

The present article deals with the similarity method to tackle the fractional Schrödinger equation where the derivative is defined in the Riesz sense. Moreover the procedure of reducing a fractional partial differential equation (FPDE) into an ordinary differential equation (ODE) has been efficiently displayed by means of suitable scaled transform to the proposed fractional equation. Furthermore the ODEs are treated effectively via the Fourier transform. The graphical solutions are also depicted for different fractional derivatives? .

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