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PROPAGATION OF PERIODIC, M-SHAPED, AND W-SHAPED SOLITONS FOR THE COUPLED TIME-FRACTIONAL RIEMANN WAVE EQUATION WITH DIFFERENT FRACTIONAL OPERATORS

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Abstract. The aim of this talk is to examine two reliable and effective exact approaches, namely the Jacobi elliptic function method (JEFM) and the modified auxiliary equation method (MAEM), for finding the exact solutions of the Riemann coupled wave system of equations. The goal of the study is to investigate the nonlinear Riemann wave (RW) equation, which explains tsunamis, tidal waves, and static uniform mediums. The variance in the governing model's travelling wave behavior is investigated for the conformable, beta, and M-truncated derivatives. The aforementioned methods can be used to derive solitary wave solutions for trigonometric, hyperbolic, and Jacobi functions. We may produce periodic solutions, bell-form solitons, anti-bell-shape solitons, M-shaped, and W-shaped solitons by changing particular values of the embedded parameters. The solutions are visually displayed in 3D and 2D for the accuracy of the result.

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