

# NOVEL COMPACT DIFFERENCE SCHEME FOR FRACTIONAL WAVE EQUATION INVOLVING CAPUTO FRACTIONAL DERIVATIVE

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## ABSTRACT

In this work, we have proposed a novel compact difference scheme for the fractional wave equation with Caputo fractional derivative. The Caputo fractional derivative in time is approximated by the novel L3 approximation and the second order derivative in spatial direction is discretized by using the compact scheme. The order of convergence of the numerical scheme is  $\mathcal{O}(\tau^2, h^4)$ . The theoretical stability and convergence of the numerical scheme is also discussed. A comparative study of numerical results with [2], are provided to show the effectiveness and accuracy of our proposed scheme.

## REFERENCES

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