

# The numerical solution of fractional Korteweg-de Vries and Burgers' equations via Haar wavelet

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## Abstract

In this article, Haar wavelet collocation technique is adapted to acquire the approximate solution of fractional KdV, Burgers' and KdV-Burgers' equations. The fractional order derivatives involved are described using the Caputo definition. In the proposed technique, the given nonlinear fractional differential equation is discretized with the help of Haar wavelet and reduced to the nonlinear system of equations, which are solved with Newton's or Broyden's method. The proposed method is semi-analytic as it involves exact integration of Caputo derivative. The proposed technique is widely applicable and robust. The technique is tested upon many test problems. The results are computed and presented in the form of maximum absolute errors which shows the accuracy, efficiency and simple applicability of the proposed method.

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