Haar Wavelet Operational Matrix Method for Solving a System of Fractional Differential Equations with nonlinear uncertain parameters

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In this paper, we develop a frame work to obtain approximate numerical solutions of systems of ordinary differential equations (ODEs) involving fractional order derivatives in the Caputo derivative sense using uniform Haar wavelets operational method. A truncated Haar wavelet series together with the wavelet operational matrix are utilized to reduce the fractional differential equations to system of algebraic equations. Numerical experiments have been conducted on test problems to illustrate the merits of the proposed method. The absolute errors are reported to show that the proposed method is working well and produces satisfactory results.