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CAS wavelet method for solving the fractional integro-differential equation with a weakly singular kernel.

Summary: In this paper, a computational method for numerical solution of a class of integro-differential equations with a weakly singular kernel of fractional order which is based on Cos and Sin (CAS) wavelets and block pulse functions is introduced. Approximation of the arbitrary order weakly singular integral is also obtained. The fractional integro-differential equations with weakly singular kernel are transformed into a system of algebraic equations by using the operational matrix of fractional integration of CAS wavelets. The error analysis of CAS wavelets is given. Finally, the results of some numerical examples support the validity and applicability of the approach.

Keywords: weakly singular integral kernel; CAS wavelets; operational matrix; block pulse functions; numerical solution
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