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Exponential Euler scheme of multi-delay Caputo-Fabrizio fractional-order differential equations. (English) [Zbl 07443318](#)

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Summary: This paper establishes the basic structure of the exponential Euler difference form for Caputo-Fabrizio fractional-order differential equations (CF-FODEs) with multiple lags. The research shows that the acquired difference form (i.e., discrete-time CF-FODEs) belongs to the scope of implicit Euler differences and then the fractional PECE algorithm is proposed to solve this implicit difference. At last, global dynamics of the discrete-time CF-FODEs is discussed from the viewpoint of control theory.

MSC:

[65L05](#) Numerical methods for initial value problems involving ordinary differential equations

[34K37](#) Functional-differential equations with fractional derivatives

Keywords:

Caputo-Fabrizio differential equation; exponential Euler method; implicit scheme

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