Doan, Thai Son; Kloeden, Peter E.
Semi-dynamical systems generated by autonomous Caputo fractional differential equations.
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The authors analyze Caputo fractional differential equations by converting them to Volterra integral equations and applying the contraction mapping principle. The nonlinear term \(g(x(t))\) is assumed to be globally Lipschitz. Weighted norms in the space of continuous functions are introduced. Also, skew-product flows are considered. The existence and continuous dependence results are well-known and classical.

Reviewer: Stig-Olof Londen (Aalto)

MSC:
34A08 Fractional ordinary differential equations
26A33 Fractional derivatives and integrals
45D05 Volterra integral equations
47N20 Applications of operator theory to differential and integral equations

Keywords:
Caputo fractional differential equation; existence and uniqueness solutions; continuous dependence on the initial condition; semi-dynamical systems; Volterra integral equations

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