Stability analysis of solutions for fractional Langevin equation involving Hadamard-Caputo derivatives with nonlocal integral and nonperiodic boundary conditions

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Abstract

In this manuscript, we study fractional Langevin equations(FLEs) involving Hadamard-Caputo's derivative of distinct orders associated with nonlocal integral and nonperiodic boundary conditions. The Hyres-Ulam (HU) stability, existence and uniqueness(EU) of solutions are established for proposed equations. Our prospective is based on the Hadamard-Caputo's derivatives and implementation of Krasnoselskii's fixed point theorem and Banach contraction mapping principle. An application is offered to smooth the understanding of the theoretical results.

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