

研发、设计、测试

## 分数阶混沌系统的Simulink动态仿真及硬件设计

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**摘要** 由于目前分数阶混沌的理论分析和硬件设计都比较烦琐, 提出了分数阶混沌系统的Simulink动态仿真方法。以分数阶Jerk系统为例, 根据分数阶系统方程搭建分数阶混沌系统仿真模型, 可动态地观察系统变量的变化规律。仿真结果表明, 分数阶混沌系统的Simulink动态仿真方法是一种切实可行的分析方法。此外, 还给出了分数阶混沌系统直接进行硬件设计的方法, 这为分数阶混沌系统的数字设计提供了新的思路。

**关键词** [分数阶混沌系统](#) [动态仿真](#) [System Generator](#)

**分类号** [TN75](#)

## Dynamic simulation and hardware design for fractional-order chaotic system based on Simulink

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### Abstract

Due to the troubles in studying and designing fractional-order chaotic systems at present, a dynamic simulation method for fractional-order chaotic systems based on Simulink is proposed. Taking the fractional-order Jerk system as an example, a simulation model for fractional-order chaotic system is built based on fractional-order system equation. The variable law of system variables can be observed dynamically. The simulation results show that a dynamic simulation method for fractional-order chaotic systems based on Simulink is feasible. In addition, the designing method of hardware for fractional-order chaotic system is given. The digital realization of the fractional-order chaotic system has been provided a new way.

**Key words** [fractional-order chaotic system](#) [dynamic simulation](#) [System Generator](#)

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