

The Analysis Of Fractional Differential Equations An Application Oriented Exposition Using Different



The Analysis Of Fractional Differential

Abstract. The differential operators are taken in the Riemann–Liouville sense and the initial conditions are specified according to Caputo's suggestion, thus allowing for interpretation in a physically meaningful way. We investigate in particular the dependence of the solution on the order of the differential equation and on the initial condition,...

Analysis of Fractional Differential Equations - ScienceDirect

Fractional calculus was first developed by pure mathematicians in the middle of the 19th century. Some 100 years later, engineers and physicists have found applications for these concepts in their areas. However there has traditionally been little interaction between these two communities.

The Analysis of Fractional Differential Equations ...

The analysis on stability of fractional differential equations is more complex than classical differential equations, since fractional derivatives are nonlocal and have weakly singular kernels.

Analysis of Fractional Differential Equations | Request PDF

Abstract. We prove existence and uniqueness theorems for the initial value problem for the system of fractional differential equations, where D^α denotes standard Riemann–Liouville fractional derivative, $0 < \alpha < 1$, and A is a square matrix. The unique solution to this initial value problem turns out to be ,...

Analysis of a system of fractional differential equations ...

Request PDF on ResearchGate | The Analysis of Fractional Differential Equations | Among the many possible definitions of differential operators of fractional (i.e., non-integer) order, the one ...

The Analysis of Fractional Differential Equations ...

The Analysis of Fractional Differential Equations. In particular, typical mathematical works provide extensive findings on aspects with comparatively little significance in applications, and the engineering literature often lacks mathematical detail and precision. This book bridges the gap between the two communities.

The Analysis of Fractional Differential Equations - An ...

The motivation of this study is to construct the truncated solution of space-time fractional differential equations by the homotopy analysis method (HAM). The first space-time fractional differential equation is transformed into a space fractional differential equation or a time fractional differential equation before the HAM. Then the power series solution is constructed by the HAM.

A New Approach for the Approximate Analytical Solution of ...

In this paper, we study the stability of n -dimensional linear fractional differential equation with time delays, where the delay matrix is defined in $(\mathbb{R}^+)^{n \times n}$. By using the Laplace transform, we introduce a characteristic equation for the above system with multiple time delays.

Stability analysis of linear fractional differential ...

Analysis of Fractional Nonlinear Differential Equations Using the Homotopy Perturbation Method
Mehmet Ali Balcı and Ahmet Yıldırım Ege University, Department of Mathematics, 35100
Bornova- İzmir, Turkey

Analysis of Fractional Nonlinear Differential Equations ...

Historical notes. In applied mathematics and mathematical analysis, fractional derivative is a derivative of any arbitrary order, real or complex. The first appearance of the concept of a fractional derivative is found in a letter written to Guillaume de l'Hôpital by Gottfried Wilhelm Leibniz in 1695.

Fractional calculus - Wikipedia

Unsourced material may be challenged and removed. (June 2013) In the fields of dynamical systems and control theory, a fractional-order system is a dynamical system that can be modeled

by a fractional differential equation containing derivatives of non-integer order. Such systems are said to have fractional dynamics.

Fractional-order system - Wikipedia

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