



**A RELIABLE ALGORITHM BASED ON THE GENERALIZED
DIFFERENTIAL TRANSFORM AND ADOMIAN
POLYNOMIALS TO FRACTIONAL
ORDER OF STIFF SYSTEMS**

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Abstract

In this article, generalized differential transform and Adomian polynomials method (GDT-APM) is proposed for the closed form solutions to fractional order of stiff systems stiff systems. In this technique, the non-linear term of these systems is replaced by its Adomian polynomial of index k . Then the dependent variable components are replaced in a recurrence relation by their corresponding differential transform of the same index. The method will be described and illustrated with some problems. Moreover, we will discuss the dynamic behavior of the system and determine the stability of the various feasible fixed points for these problems. Therefore, the obtained results confirm that the GDT-APM is very applicable, effective and convenient.

Keywords and phrases: fractional differential transform method, Adomian polynomials, fractional system of stiff systems.

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