On the Hyers-Ulam Stability of Laguerre and Bessel Equations by Laplace Transform Method

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Abstract: The purpose of this paper is to obtain new sufficient conditions guaranteeing the Hyers-Ulam stability of Laguerre differential equation

$$xy'' + (1-x)y' + ny = 0$$

and Bessel differential equation of order zero

$$xy'' + y' + xy = 0.$$

Our findings make a contribution to the topic and complete those in the relevant literature.

Keywords: *Hyers-Ulam stability; Laguerre equation; Bessel equation; Laplace transform.*

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1 Introduction

Differential equations of second order can serve as excellent tools for description of mathematical modelling of systems and processes in the fields of engineering, physics, chemistry, economics, aerodynamics, and polymerrheology, etc. Therefore, the qualitative behaviors of solutions of differential equations of second order, stability, boundedness, oscillation, etc., play an important role in many real world phenomena related to the sciences and engineering technique fields. However, we would not like to give the details

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