The New Integral Transform "ELzaki Transform"

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Abstract

In this paper a new integral transform namely Elzaki transform was applied to solve linear ordinary differential equations with constant coefficients.

Keywords: Elzaki transform- Differential Equations.

Introduction

ELzaki Transform is derived from the classical Fourier integral. Based on the mathematical simplicity of the Elzaki transform and its fundamental properties.

Elzaki transform was introduced by Tarig ELzaki to facilitate the process of solving ordinary and partial differential equations in the time domain.

Typically, Fourier, Laplace and Sumudu transforms are the convenient mathematical tools for solving differential equations,

Also ELzaki transform and some of its fundamental properties are used to solve differential equations.

A new transform called the ELzaki transform defined for function of exponential order we consider functions in the set A defined by:

$$A = \left\{ f(t) : \exists M, k_1, k_2 > 0, |f(t)| < M e^{\frac{|t|}{k_i}}, \ if \ \ t \in (-1)^j \ X \ [0, \infty) \right\} \quad (1)$$

For a given function in the set A, the constant M must be finite number, k_1, k_2 may be finite or infinite.

The ELzaki transform denoted by the operator E (.) defined by the integral equations

$$E\left[f(t) \right] = T(v) = v \int_0^\infty f(t) e^{\frac{-t}{v}} dt \ , \ \ t \geq 0 \ , \ k_1 \leq v \leq k_2 \quad (2)$$

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Kulkarni, Shrikaant,Gochhait, Saikat

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An Introduction to Transform Theory ,1971-09-30 An Introduction to Transform Theory **Two New Integral Transforms and Their Application** X X. Newhall,California Institute of Technology. Division of Engineering and Applied Science,1972 *Operational Calculus of Some Integral Transforms* Sadikali Shaikh,2019-02-12 I am very fascinated to publish this book This book is nothing but a part of my research which has been mentored by Prof M S Chaudhary at the

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