

STUDY OF THE SUMUDU MELLIN INTEGRAL TRANSFORM AND IT'S APPLICATIONS

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Abstract

In this paper we study how the Sumudu Mellin Integral Transform (SMIT) in $[0, \infty]$ is derived by using the Laplace Sumudu Integral Transform. We derive inversion, convolution, orthogonality (Parsevals). First and second shifting theorems and properties using SMIT. We have also studied one important theorem by using Ramanujan's formula and showed this transform is applied for solving initial and boundary value problems. The relation between the Sumudu and Mellin transform is also discussed. We obtain the particular solution of the Laplace equation in polar form by using this integral transform. The solution is graphically represented using Matlab.

Key Words: Double Laplace Transform, Mellin Integral Transform, Sumudu Transform, Partial Differential equations.

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