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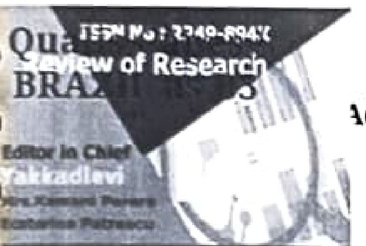

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VOLUME - 10 | ISSUE - 3 | DECEMBER - 2020

AN APPROACH TO MULTIDIMENSIONAL HERMITE TRANSFORM

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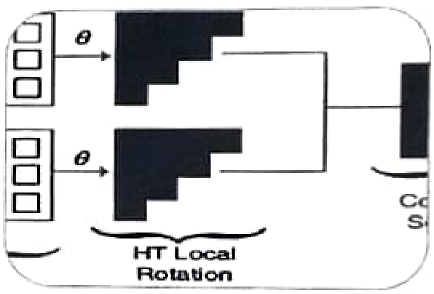
ABSTRACT

In the present paper making an appeal to generalized multidimensional Lagurre Transform and New multidimensional Integral Transform by Chandel and Chauhan [7, 8] and theory of generalized multiple hypergeometric functions of several variable due to Lauricalla [15], Srivastava-Daoust [17], Exton ([12],[13]),Chandel [2],Chandel, Gupta ([3],[22]), Karlsson [14], Chandel-Vishwakarma ([14],[15]), including multivariable H-function of Srivastava-Panda ([18],[19]), we introduce multidimensional Hermit Transform and we find results involving generalized multiple hypergeometric functions of Srivastava and Daoust with Hermit Transform. Also we find the results for their special cases.



***2010 Mathematical Subject Classification:** 33C50*

KEYWORDS: *Laguerre Transforms, multidimensional Integral Transform, multidimensional Hermite Transform, Generalized multiple Hypergeometric functions.*

INTRODUCTION

Chandel and Chauhan |7| introduced multidimensional Laguerre transforms defined by

$$(1.1)\quad L^{(\alpha,\beta,\gamma)}_{\gamma_1,\ldots,\gamma_n}\{\ \} = \frac{(-1)^n m!\,\Gamma(\beta-\alpha-m+\gamma_1+\cdots+\gamma_n)\Gamma(\gamma_1+\cdots+\gamma_n)}{\Gamma(\beta-\alpha+\gamma_1+\cdots+\gamma_n)\Gamma(\beta+\gamma_1+\cdots+\gamma_n)\Gamma(\gamma_1)\ldots\Gamma(\gamma_n)}$$

$$\int_0^\infty \cdots \int_0^\infty e^{-(x_1+\cdots+x_n)}(x_1+\cdots+x_n)^\beta x_1^{\gamma_1-1}\ldots.x_n^{\gamma_n-1} L_m^{(\alpha)}(x_1+\cdots+x_n)\{\ \}dx_1\ldots.dx_m$$

where $\mathrm{Re}(\beta-\alpha-m+\gamma_1+\cdots+\gamma_n)>0$; m, n are arbitrary positive integers; $\mathrm{Re}(\gamma_j)>0$, $j=1,\ldots,n$.

Chandel and Chauhan [7] also introduced another generalized multidimensional Laguerre defined as

$$(1.2)\quad L^{(\beta_1,\ldots,\beta_n;n_1,\ldots n_n;K)}_{\gamma_1,\ldots,\gamma_n\gamma_1,\ldots,\gamma_n}\{\ \} = K\prod_{j=1}^{n}\frac{(-1)^n n_j!\,\Gamma(\gamma_j-\beta_j-\eta_j)}{\Gamma(\gamma_j-\beta_j)\Gamma(\gamma_j)}\int_0^\infty \cdots \int_0^\infty e^{-\sum_{i=1}^n(\alpha_1^i x_1+\cdots+\alpha_n^i x_n)}$$

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