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RECTANGULAR EXTENSION OF ELEMENTS OF ABSTRACT TOPOLOGICAL SPACES

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ABSTRACT

The approach of an object is based on quantifying a precise functional frame for the multidimensional scaling spaces as a special case consisting of discriminate analytical signals makes main idea to subordinate the Gelfand Shilov techniques satisfying the user's requirements of open & close management and visual query in theoretical practical technical forward models a novel scheme study to be taken into consideration during the planning under the same conditions generalize the Laplace Meijer transform having generalizations time to time a combination of two totally different defined two families having different kernels in the case of different dimensional generalized simple objective function sense about with an apparently new appropriate domains for harmonic analysis due to wide spread applicability to solve the PDE involving distributional condition designed by introducing convenient explanations for more general point of view to achieve and enjoy a slightly faster decay in domain even in polynomial case using various classification accuracies obtained using different metrics through the kernel K the quotient of positive polynomials a number of testing function spaces along with their duals follows from the property of strong continuity at origin implies subordination process described as an extensions of the transforms where the linear and bounded map is actually well defined in particular the case at any point.

KEYWORDS: Laplace Meijer Transform, Continuous Linear Functional, Strong Continuity, Multidimensional Sense, Gelfand Shilov Spaces.

1. INTRODUCTION

In many classical spaces of the methods mathematical traditional approach are of great interest to gain stress back due to the concept of imposing conditions on the decay of the fundamental functions even more general constructions in María(2019) to the work of Todor(2008), Obient(2018), Cappiello (1996) appropriate flavor in several branches of engineering have its original roots in the work of Schwartz(1950), Zemanian(1968), Snedonn(1972) at infinity with growth of the derivative to all the integrable functions used to formulate generalized solutions of partial differential equations as well as ordinary differential equations has been studied as a bounded operator for propogation of heat in cylindrical coordinates. Design to promote the linear part is formulated by Raki(2012), Geetha(2011) the generalized Laplace Meijer transform defind in Gulhane(2006) a widest one result on the connection between the transforms deduce straightforwardly both local and global behavior of the transform Gomez(2001) by calculating a number of useful properties for completely monotonic Meijer class in particular referred as Generalized Meijer transform converted to the classical Meijer transform in some situation particularly a second generalization of the Meijer transform especially those regarding Meijer Laplace transformation both in the distributional sense including discussion on properly chosen parameters.

Let's focus back on the continuous collection of six distinct volumes by Gelfand(1968), Brychkov (1968) commute with the generalized functions naturally lead to differential equations whose solution is a work for Dirac delta & Heaviside distributions a discontinuous function named after the mathematician Oliver Heaviside whose value is zero for negative arguments and one for positive arguments. It is relevant to mention the study of Gaber frames for introduction directionally sensitive time frequency decomposition & representation of functions by Loukas [gmailthe major protection devices in Cordero (2010) a generalized distribution theory a class of Gelfand Shilov spaces Teofanov N (2015), Teofanov N(2012) since the appropriate support of transform in positive domain which do not contain explicit regularity conditions. The spaces by Toft (2010), Toft (2012) connected with the modulation spaces by Teofanov (2006) the main tool to prove the some of main results in Feichtinger (1992) Gelfand Shilov type spaces Chung (1996) to study with the Symbol-Global operator's type in the context of time-frequency analysis.

We start by recalling most existing dimensional techniques from Lozanov (2007) involving exponential function of generalized functions having the approach both integral differentiation multiplication to solve different types different order different degree ordinary differential equations partial differential equations consisting of all infinitely differentiable functions $\varphi(t, x)$ based on the two dimensional K type spaces in connection with the testing function spaces upto some desired order Gelfand Shilov concept by Eijndhoven(1987) equipped with the weak topologies generated in Roberson(1972) the above defined continuous linear functional by the family of seminorms results to establish a series finally to define meaningful & computable Laplace Meijer transformation the space with constraints mainly depend on the decrease of the functions at infinity arise for the systematic study with real numbers a, b inequality satisfied for the relation $\mu > b$ as discussed in Padmaja[ ] space $K_{\alpha, A} = K_{\alpha, A}\left(R^d\right)$ μ being either the number zero or a complex satisfying $\operatorname{Re}\mu > 0$ consists of all infinitely differentiable functions for $0 < t < \infty, 0 < x < \infty$ defined by

$$h(t, x) = \log x \qquad 0 < x < e^{-1}$$

$$= -1, \qquad e^{-1} < x < \infty$$

The massive high dimensional modern manufacturing function satisfying the inequality for each nonnegative integer l, k where the constants A and C_k depend on the everywhere differentiable testing function φ get $\mu^{\mu\alpha} = 1$ for $\mu = 0$ with topology of the multinormed space generated by the countable multiform $\left\{\gamma^{\mu}_{a, b, l, k}\right\}^{\infty}_{l, k=0}$ and $\left\{\gamma^{0}_{a, b, l, k}\right\}^{\infty}_{l, k=0}$ by

$$\gamma^{\mu}_{a, b, l, k}\ \varphi(t, x) = \sup_{\substack{0<t<\infty \\ 0<x<\infty}} \left| e^{at+bx} x^{\mu-1/2} D^l_t S^k_\mu \varphi(t, x) \right|$$

$$\gamma^{0}_{a, b, l, k} \varphi(t, x) = \sup_{\substack{0<t<\infty \\ 0<x<\infty}} \left| e^{at+bx} x^{-1/2} [h(t, x)]^{-1} D^l_t S^k_\mu \varphi(t, x) \right| \qquad \leq C_k A^{\mu} \mu^{\mu\alpha}$$

With above mentioned $K_{\alpha, a}$ is a countably multiform complete normed real (or complex) the finest polar topology with continuous induction map K_{α, a_ν} to $K_{\alpha, a}$ for every choice of $\nu > 0$ with the most open sets. We set for comfort zone the development of the theory of distributional generalized Laplace Meijer transform $j_\mu(t, x)$ as $x^{\mu-1/2}$ when $\operatorname{Re}\mu > 0$ as $[x^{1/2} h(t, x)]^{-1}$ if $\mu = 0$ to convert the two proceeding equations as a convergent transform

$$\gamma^{\mu}_{a, b, l, k}\ \varphi(t, x) = \sup_{\substack{0<t<\infty \\ 0<x<\infty}} \left| e^{at+bx} j_\mu(t, x) D^l_t S^k_\mu \varphi(t, x) \right|$$

2. Multidimensional Gelfand Shilov Spaces

To simplify the exposition that objects develops sufficient well established valuable techniques of generalized functions also known as distributions explore a similar idea but focus on describing the systematic theory of distributional integral transform due to wide spread various properties & applicability to construct the constraints with projective descriptions of a general class of Gelfand Shilov spaces of Roumieu type are indispensable for achieving completed tensor product representations of different important classes of vector valued ultra-differentiable functions of Roumieu. The recent achievements relate this matter with the asymptotic expansion create the main interest historically for Quantum Mechanics where the exponential decay of eigen functions have intensively studied. extend focus on the decrease of the function $\varphi(t_i, x_j) = \varphi(t_1, ---, t_m, x_1, ---, x_n)$ at infinity respective to the polynomials in $t_1, ---, t_m, x_1, ---, x_n$ derivative respect to $t_1, ---, t_m, x_1, ---, x_n$ stands for w. r. to $\partial t_1^{l_1} --- \partial t_m^{l_m}$ and respective Meijer transforms results investigated introduced the equiparallel space finally we define for $i = 1, ---, m;\ j = 1, ---, n$ the topology of the multinormed space generated by the countable multiform the Laplace Meijer transformation with distinct $m+n$ real numbers a, l inequality satisfied for the relation $\mu > b$ the space $K_{\alpha, a} = K_{\alpha_1, ---, \alpha_m, a} = K_{\alpha_1, ---, \alpha_m, a}(R^d)$ by topology of the multinormed space generated by the countable multiform

$$\gamma^{\mu}_{a, b, l, k}\ \varphi(t_i, x_j) = \sup_{\substack{0<t_i<\infty \\ 0<x_j<\infty}} \left| e^{a(t_1+---+t_m)+b(x_1+---+x_n)} j_{\mu}(t, x) D^{l}_{t_1+---+t_m} S^{k}_{\mu} \varphi(t_i, x_j) \right|$$

$$\leq C_l A_1^{a_1} --- A_m^{a_m} a_1^{a_1 \alpha_1} --- a_m^{a_m \alpha_m} < \infty$$

The constants $C_l, A_1, ---, A_m$ depend on function $\varphi(t_i, x_j)$ of $m+n$ independent variables for every choice of $\nu > 0$ mentioned $K_{\alpha, a}$ is a countably multiform complete normed real (or complex) strongest possible one topology with $a_\nu = a_{\nu_1}, --- a_{\nu_m}$ continuous $m+n$ induction maps K_{α, a_ν} to $K_{\alpha, a}$ for $\alpha = \alpha_1, ---, \alpha_m$ Choose an integer $p_1 --- p_m$ depending on the values of $A_1, ---, A_m$ and $\delta_1, ---, \delta_m$ such that

$$C_l A_1^{a_1} --- A_m^{a_m} \leq C_l (p_1 + \delta_1)^{a_1} --- (p_m + \delta_m)^{a_m}$$

We immediately get for $\varphi(t_i, x_j) \in K_{\alpha, a, A_i}$ from

$$\sup_{\substack{0<t_i<\infty \\ 0<x_j<\infty}} \left| e^{a(t_1+---+t_m)+b(x_1+---+x_n)} j_\mu(t, x) D^l_{t_1+---+t_m} S^k_\mu \varphi(t_i, x_j) \right|$$

$\leq C_l A_1^{a_1} --- A_m^{a_m} a_1^{a_1\alpha_1} --- a_m^{a_m\alpha_m}\; K_{\alpha, a} = \bigcup_{A_i>0} K_{\alpha, a, A_i}$ the constraints studied have crucible role in modern manufacturing feature extraction feature analysis mainly converted on the growth of the partial derivatives $D_t^l S_\mu^k \varphi(t, x)$ instead the decrease of the function $\varphi(t_i, x_j) = \varphi(t_1, -—, t_m, x_1, -—, x_n)$ at infinity respective to the polynomials in $t_1, -—, t_m, x_1, -—, x_n$ for diversion study of exponential constructed space $K^{\beta, l} = K^{\beta_1, ---, \beta_m, l}$ with property

$$\gamma^\mu_{a, b, l, k}\; \varphi(t_i, x_j) = \sup_{\substack{0<t_i<\infty \\ 0<x_j<\infty}} \left| e^{a(t_1+---+t_m)+b(x_1+---+x_n)} j_\mu(t, x) D^l_{t_1+---+t_m} S^k_\mu \varphi(t_i, x_j) \right|$$

$$\leq C_a B_1^{l_1} --- B_m^{l_m} l_1^{l_1\beta_1} --- l_m^{l_m\beta_m}$$

where the constants $C_a, B_1, --- B_m$ is a function depend on $m+n$ independent variables continuous differentiable function $\varphi(t_i, x_j)$ satisfying convergent continuous induction map from $K^{\beta_\tau, l}$ to $K^{\beta_\tau, l}$ every choice of $\tau > 0$ $\beta_\tau = \beta_{\tau_1}, ---, \beta_{\tau_m}$ for mentioned $K^{\beta, l}$ a countably multiform complete normed real (or complex) strongest possible one topology as a application of differentiable functions whose derivatives do or donot exist in the classical sense for the space having constraints mainly on the growth of the involved partial derivatives as l approaches to infinity for $\beta > 0$ as the origin. Choose an integer $p_1^* --- p_m^*$ depending on the values of $B_1, ---, B_m$ and $\delta_1^*, -—, \delta_m^*$ such that

$$C_a B_1^{l_1} --- B_m^{l_m} \leq C_a (p_1^* + \delta_1^*)^{a_1} --- (p_m^* + \delta_m^*)^{a_m}$$

We immediately get $K^{\beta, l} = \bigcup_{B_i>0} K^{\beta, l, B_i}$ for $\varphi(t_i, x_j) \in K^{\beta, l, B_i}$ from

$$\sup_{\substack{0<t_i<\infty \\ 0<x_j<\infty}} \left| e^{a(t_1+---+t_m)+b(x_1+---+x_n)} j_\mu(t, x) D^l_{t_1+---+t_m} S^k_\mu \varphi(t_i, x_j) \right|$$

$$\leq C_a (p_1^* + \delta_1^*)^{a_1} --- (p_m^* + \delta_m^*)^{a_m} l_1^{l_1\beta_1} --- l_m^{l_m\beta_m}$$

The extensively used_contribution for the development of the necessary facts related to the generalized functions theory by Schwartz hence the construction extension the Meijer–Laplace transform for theory of generalized distributional transform based on the application of natural transforms the test function space K consisting of all infinitely differentiable function $\varphi(t_i, x_j)$ defined for all positive values of $t_1, ---, t_m, x_1, --, x_n$ having continuous derivative over some domain $C^{\infty}(R^{d_1})$ satisfying

$$\sup_{\substack{0<t_i<\infty \\ 0<x_j<\infty}} \left| e^{a(t_1+---+t_m)+b(x_1+---+x_n)} j_\mu(t, x) D^l_{t_1+---+t_m} S^k_\mu \varphi(t_i, x_j) \right|$$

$$\leq C_{al} A_1^{a_1} --- A_m^{a_m} B_1^{l_1} --- B_m^{l_m}$$

$$a_1^{a_1\alpha_1} --- a_m^{a_m\alpha_m} l_1^{l_1\beta_1} --- l_m^{l_m\beta_m} < \infty$$

Defined for all positive values of $t_1, ---, t_m, x_1, --, x_n$ let there be given $\alpha_i, \beta_i > 0$, $A_i, B_i \in R$ fixed with $\varphi(t_i, x_j)$ function having continuous derivative over some domain $C^{\infty}(R^{d_1})$. Gelfand Shilov type space connected to study the local regularity properties of analyzing functions relative to kernel of Laplace transform $K^{\beta_i, B_i}_{\alpha_i, A_i} = K^{\beta_i, B_i}_{\alpha_i, A_i}(R^{d_1})$ is defined by

$$K^{\beta_i, B_i}_{\alpha_i, A_i} = \{ \varphi \in C^{\infty}(R^{d_1}) / \exists\, C_{al} > 0,$$

$$\sup_{\substack{0<t_i<\infty \\ 0<x_j<\infty}} \left| e^{a(t_1+---+t_m)+b(x_1+---+x_n)} j_\mu(t, x) D^l_{t_1+---+t_m} S^k_\mu \varphi(t_i, x_j) \right|$$

$$\leq C_{al} A_1^{a_1} --- A_m^{a_m} B_1^{l_1} --- B_m^{l_m}$$

$$a_1^{a_1\alpha_1} --- a_m^{a_m\alpha_m} l_1^{l_1\beta_1} --- l_m^{l_m\beta_m} \}$$

Obviously the spaces $K_{\alpha_i, a}$, $K^{\beta_i, l}$ are subspaces of the above testing function space for all non negative numbers α_i, β_i for $0 < t_i < \infty, 0 < x < \infty$ where the constants C_{al}, A_1, B_1 depend on the everywhere differential testing function $\varphi(t_i, x_j)$. From a topological point of view the spaces $K^{\beta_i}_{\alpha_i}$ and $\sum^{\beta_i}_{\alpha_i}$ are given by the union and intersection for $A_i, B_i \geq 0$ of $K^{\beta_i, B_i}_{\alpha_i, A_i}$ respectively with their topologies having special paid attention on the inductive and projective limits:

$$K^{\beta_i}_{\alpha_i} = ind \lim_{A_i, B_i > 0} K^{\beta_i, B_i}_{\alpha_i, A_i} \text{ and } \sum^{\beta_i}_{\alpha_i} = proj \lim_{A_i, B_i > 0} K^{\beta_i, B_i}_{\alpha_i, A_i}$$

$K^{\beta_i}_{\alpha_i}$ and $\sum^{\beta_i}_{\alpha_i}$ are nontrivial iff $\alpha_i + \beta_i \geq 0$ and $\alpha_i\ \beta_i > 0$. the union and intersection for $A, B \geq 0$ of $K^{\beta_i, B_i}_{\alpha_i, A_i}$.

Evidently the space $K_{\alpha_i}^{\beta_i}$ of all non negative numbers α, β is contained in the intersection of the spaces $K_{\alpha_i, a}$, $K^{\beta_i, l}$ whereas space as a union of countably normed spaces were able to define sequential convergence in all metioned spaces such that these spaces became sequentially complete.

The Gelfand Shilov type distributional spaces $\left(K_{\alpha_i}^{\beta_i}\right)'$ and $\left(\Sigma_{\alpha_i}^{\beta_i}\right)'$ are given by the intersection and union for $A, B \geq 0$ of $\left(K_{\alpha_i, A_i}^{\beta_i, B_i}\right)'$ and its topological sence is given by the projective and inductive limits:

$$\left(K_{\alpha_i}^{\beta_i}\right)' = \bigcap_{A_1, B_1 > 0} \left(K_{\alpha_i, A_i}^{\beta_i, B_i}\right)' \text{ and } \left(\Sigma_{\alpha_i}^{\beta_i}\right)' = \bigcup_{A_1, B_1 > 0} \left(K_{\alpha_i, A_i}^{\beta_i, B_i}\right)'$$

Here $\left(K_{\alpha_i}^{\beta_i}\right)'$ is the dual of $K_{\alpha_i}^{\beta_i}$ and $\left(\Sigma_{\alpha_i}^{\beta_i}\right)'$ is the dual of $\Sigma_{\alpha_i}^{\beta_i}$.

Choose an integer $p_1 --- p_m$, $p_1^* --- p_m^*$ depending on the values of $A_1, ---, A_m$, $B_1, ---, B_m$ and $\delta_1, ---, \delta_m$, $\delta_1^*, ---, \delta_m^*$ such that

$$C_{a,b} A_1^{a_1} --- A_m^{a_m} B_1^{l_1} --- B_m^{l_m}$$

$$\leq C_{l,b} (p_1 + \delta_1)^{a_1} --- (p_m + \delta_m)^{a_m} (p_1^* + \delta_1^*)^{a_1} --- (p_m^* + \delta_m^*)^{a_m}$$

We immediately get for $\varphi(t_i, x_j) \in K_{\alpha, a, A_i}^{\beta, l, B_i}$ from

$$\sup_{\substack{0 < t_i < \infty \\ 0 < x_j < \infty}} \left| e^{a(t_1 + --- + t_m) + b(x_1 + --- + x_n)} j_\mu(t, x) D_{t_1 + --- + t_m}^l S_\mu^k \varphi(t_i, x_j) \right|$$

$$\leq C_{al} A_1^{a_1} --- A_m^{a_m} B_1^{l_1} --- B_m^{l_m}$$

$$a_1^{a_1 \alpha_1} --- a_m^{a_m \alpha_m} l_1^{l_1 \beta_1} --- l_m^{l_m \beta_m}$$

$$K_{\alpha, a}^{\beta, l} = \bigcup_{A_i, B_i > 0} K_{\alpha, a, A_i}^{\beta, l, B_i}$$

Which is best of our knowledge an important objective that can make our metrics invariant under useful transformations.

3. Expansional Topological Spaces

Now we apply several other approaches for the distributional Meijer transformation defined above a generalized version of the classical suitable kernel exponential sence as well as polynomial approach relative to Gelfand Shilov type spaces $K_{\alpha_j,\,A_j}^{\beta_j,\,B_j} = K_{\alpha_j,\,A_j}^{\beta_j,\,B_j}\left(R^{d_2}\right)$ for convenience under proper coordination of the variables and parameters in a unified manner where the constants $C_{bk},\, A_j,\, B_j$ depend on the everywhere differential testing function φ by

$$K_{\alpha_j,\,A_j}^{\beta_j,\,B_j} = \left\{ \varphi \in C^{\infty}\left(R^d\right) / \exists\, C_{l_2 q_2} > 0\,,\right.$$

$$\sup_{\substack{0<t_i<\infty \\ 0<x_j<\infty}} \left| e^{a(t_1+---+t_m)+b(x_1+---+x_n)} j_{\mu}(t,\,x) D^{l}_{t_1+---+t_m} S^{k}_{\mu} \varphi(t_i,\,x_j) \right|$$

$$\leq C_{bk} A^{b} B^{k} b^{b\alpha_j} k^{k\beta_j}$$

For $A_j,\, B_j \geq 0$ the spaces $K_{\alpha_j}^{\beta_j}$ and $\Sigma_{\alpha_j}^{\beta_j}$ having various applications for analysis partial differential equations stochastic process representation theory are given by the union and intersection of $K_{\alpha_j,\,A_j}^{\beta_j,\,B_j}$ present where many continuous non-continuous problems with its topology given by the appropriate inductive and projective limits:

$$K_{\alpha_j}^{\beta_j} = ind \lim_{A_2,\,B_2>0} K_{\alpha_j,\,A_j}^{\beta_j,\,B_j} \text{ and } \Sigma_{\alpha_j}^{\beta_j} = proj \lim_{A_2,\,B_2>0} K_{\alpha_j,\,A_j}^{\beta_j,\,B_j}$$

$K_{\alpha_j}^{\beta_j}$ and $\Sigma_{\alpha_j}^{\beta_j}$ are nontrivial iff $\alpha_j + \beta_j \geq 0$ and $\alpha_j\ \beta_j > 0$. the union and intersection for $A_j,\, B_j \geq 0$ of $K_{\alpha_j,\,A_j}^{\beta_j,\,B_j}$.

The Gelfand Shilov type distributional spaces $\left(K_{\alpha_j}^{\beta_j}\right)'$ and $\left(\Sigma_{\alpha_j}^{\beta_j}\right)'$ are given by the smooth intersection and union for $A_j,\, B_j \geq 0$ of $\left(K_{\alpha_j,\,A_j}^{\beta_j,\,B_j}\right)'$ and its corresponding topological sence is given by the projective and inductive limits:

$$\left(K_{\alpha_j}^{\beta_j}\right)' = \bigcap_{A_2,\,B_2>0} \left(K_{\alpha_j,\,A_j}^{\beta_j,\,B_j}\right)' \text{ and } \left(\Sigma_{\alpha_j}^{\beta_j}\right)' = \bigcup_{A_2,\,B_2>0} \left(K_{\alpha_j,\,A_j}^{\beta_j,\,B_j}\right)'$$

Here we design a theoretical forward platform over integral representations of the generalized hyper geometric functions $\left(K_{\alpha_j}^{\beta_j}\right)'$ the dual of $K_{\alpha_j}^{\beta_j}$ and $\left(\Sigma_{\alpha_j}^{\beta_j}\right)'$ the dual of $\Sigma_{\alpha_j}^{\beta_j}$ to establish new inequalities. Now we are ready to introduce most existing dimensionality theory of straightforward extension of two dimensional some K type spaces for $\alpha_i = \alpha_1,\, --, \alpha_m;\ \beta_i = \beta_1, ---, \beta_n$ of Laplace Meijer transform $K_{\alpha_{ij},\,A_{ij}}^{\beta_{ij},\,B_{ij}}$ using Gelfand Shilov technique defined by

$$K_{\alpha_{ij},\,A_{ij}}^{\beta_{ij},\,B_{ij}} = \Big\{ \varphi \in C^{\infty}\left(R^{d_i}\right) / \exists\, C > 0\,,$$

$$\sup_{\substack{0<t_i<\infty \\ 0<x_j<\infty}} \left| e^{a(t_1+---+t_m)+b(x_1+---+x_n)}\, j_{\mu}(t,\, x) D^{l}_{t_1+---+t_m} S^{k}_{\mu}\varphi(t_i,\, x_j) \right|$$

$$\leq C\; A_1^{a_1} --- A_m^{a_m} A^b B_1^{l_1} --- B_m^{l_m} B^k$$

$$l_1^{l_1\alpha_1} --- l_m^{l_m\alpha_m} b^{b\alpha_j} a_1^{a_1\alpha_1} --- a_m^{a_m\alpha_m} k^{k\beta_j} \Big\}$$

Where the constants $C;\; A_{ij} = A_i, A_j;\; B_{ij} = B_i, B_j; (i = 1,\, 2,\, -\!-\!-,\, m;\; j = 1,---n)$ depend on the everywhere differential testing function $\varphi(t_i,\, x_j)$. The spaces $K_{\alpha_{ij},\,A_{ij}}^{\beta_{ij},\,B_{ij}}$ and $\sum_{\alpha_{ij},\,A_{ij}}^{\beta_{ij},\,B_{ij}}$ a pair of Laplace Meijer transform as a very powerful mathematical tool applied in various areas of engineering and science with the increasing complexity of engineering problems are given by the union and intersection for $A_{ij},\, B_{ij} \geq 0$ of $K_{\alpha_{ij},\,A_{ij}}^{\beta_{ij},\,B_{ij}}$ and its topology is given by the inductive and projective limits:

$K_{\alpha_i,\,\alpha_j}^{\beta_i,\,\beta_j} = ind \lim\limits_{A_1,\, B_1>0} K_{\alpha_{ij},\,A_{ij}}^{\beta_{ij},\,B_{ij}}$ and $\sum_{\alpha_i,\,\alpha_j}^{\beta_i,\,\beta_j} = proj \lim\limits_{A_1,\, B_1>0} K_{\alpha_i,\,A_i}^{\beta_i,\,B_i}$

$K_{\alpha_i,\,\alpha_j}^{\beta_i,\,\beta_j}$ and $\sum_{\alpha_i,\,\alpha_j}^{\beta_i,\,\beta_j}$ are nontrivial iff $\alpha_{ij} + \beta_{ij} \geq 0$ and $\alpha_{ij}\; \beta_{ij_i} > 0$ the union and intersection for $A_{ij},\, B_{ij} \geq 0$ of $K_{\alpha_i,\,A_i}^{\beta_i,\,B_i}$.

The spaces $\left(K_{\alpha_i,\,\alpha_j}^{\beta_i,\,\beta_j}\right)'$ and $\left(\sum_{\alpha_i,\,\alpha_j}^{\beta_i,\,\beta_j}\right)'$ are given by the intersection and union for $A_{ij},\, B_{ij} \geq 0$ of $\left(K_{\alpha_i,\,A_i}^{\beta_i,\,B_i}\right)'$ and its topological sence is given by the projective and inductive limits:

$\left(K_{\alpha_i,\,\alpha_j}^{\beta_i,\,\beta_j}\right)' = \bigcap\limits_{A_i,\, B_i>0} \left(K_{\alpha_{ij},\,A_{ij}}^{\beta_{ij},\,B_{ij}}\right)'$ and $\left(\sum_{\alpha_i,\,\alpha_j}^{\beta_i,\,\beta_j}\right)' = \bigcup\limits_{A_i,\, B_i>0} \left(K_{\alpha_{ij},\,A_{ij}}^{\beta_{ij},\,B_{ij}}\right)'$

The progressive space $K_{\alpha_i,\,\alpha_j}^{\beta_i,\,\beta_j,\,+}$ is defined by $K_{\alpha_i,\,\alpha_j}^{\beta_i,\,\beta_j,\,+} = \bigcup\limits_{A_i,\, B_i>0} K_{\alpha_i,\,A_i}^{\beta_i,\,B_i,+}$ and its topology is defined by the inductive limit $K_{\alpha_i,\,\alpha_j}^{\beta_i,\,\beta_j,\,+} = ind \lim\limits_{A_i,\, B_i>0} K_{\alpha_i,\,A_i}^{\beta_i,\,B_i,+}$.

Obviously multiplication by independent variables $t_1, -\!-\!-, t_m,\, x_1, -\!-\!-, x_n$ and differentiation are continuous operations in progressive space $K_{\alpha_i,\,\alpha_j}^{\beta_i,\,\beta_j,\,+}$ a closed subspace of Gelfand Shilov Laplace Meijer transform $K_{\alpha_i}^{\beta_i,+}$ for $\alpha_i + \beta_i \geq 1$ satisfying an elements in space $K_{\alpha_i,\,\alpha_j}^{\beta_i,\,\beta_j,\,+}$ not only additional localization property sometimes called strip localization but also almost exponentially strip localization.

Here $\left(K_{\alpha_i,\alpha_j}^{\beta_i,\beta_j}\right)'$ is the dual of $K_{\alpha_i,\alpha_j}^{\beta_i,\beta_j}$ and $\left(\sum_{\alpha_i,\alpha_j}^{\beta_i,\beta_j}\right)'$ is the dual of $\sum_{\alpha_i,\alpha_j}^{\beta_i,\beta_j}$ the corresponding created dual spaces introduced for the study of partial differential equations in technical subjects are the spaces of ultradistributions of Roumieu and Beurling respectively. Unless specified otherwise all the spaces introduced throughout will henceforth be considered equipped with their naturally Hausdorff locally convex topologies on these spaces are generated by the family of seminorms $\left\{\gamma_{a,b,l,k}^{\mu}\right\}$.

We consider the domain $-\infty < t_i < 0,\ 0 < x_j < \infty$ is in $\hat{K}_{\alpha_i,\alpha_j}^{\beta_i,\beta_j}$ if $\varphi(t_i,\ x_j)$ smooth function $\hat{\varphi}(t_i,\ x_j) = \varphi(-t_i,\ x_j)$is in $K_{\alpha_i,\alpha_j}^{\beta_i,\beta_j}$ for which

$$\leq C\ A_1^{a_1} --- A_m^{a_m} A^b B_1^{l_1} --- B_m^{l_m} B^k$$

$$l_1^{l_1\alpha_1} --- l_m^{l_m\alpha_m} b^{b\alpha_j} a_1^{a_1\alpha_1} --- a_m^{a_m\alpha_m} k^{k\beta_j}$$

The following topology of bounded convergence is assigned to the dual function less than ∞ satisfying all above mentioned properties for all corresponding defined Laplace Meijer K spaces in above sections the spaces.

$$\hat{K}_{\alpha_i},\ \hat{K}^{\beta_i},\ \hat{K}_{\alpha_j},\ \hat{K}^{\beta_j},\ \hat{K}_{\alpha_i}^{\beta_i},\ \hat{K}_{\alpha_j}^{\beta_j},\ \hat{K}_{\alpha_i,\alpha_j}^{\beta_i,\beta_j}$$

Which have defined domain $-\infty < t_i < 0,\ 0 < x_j < \infty$ Independently control of the decay in transforms depending on closed subspaces consisting of analytic signals various choices of distributional spaces defined above nondefined if equipped with their naturally Hausdrof locally convex topologies generated by their respective corresponding total families of seminorms used their which are almost exponentially localized in time and frequency variables in each variables are as usal denoted by $T_{\alpha_i},\ T^{\beta_i},\ T_{\alpha_j},\ T^{\beta_j},\ T_{\alpha_i}^{\beta_i},\ T_{\alpha_j}^{\beta_j},\ T_{\alpha_i,\alpha_j}^{\beta_i,\beta_j}$. Moreover all the spaces having domain $-\infty < t_i < 0,\ 0 < x_j < \infty$ are equipped with their naturally Hausdrof locally convex topologies $\hat{T}_{\alpha_i},\ \hat{T}^{\beta_i},\ \hat{T}_{\alpha_j},\ \hat{T}^{\beta_j},\ \hat{T}_{\alpha_i}^{\beta_i},\ \hat{T}_{\alpha_j}^{\beta_j},\ \hat{T}_{\alpha_i,\alpha_j}^{\beta_i,\beta_j}$.

We extend the space to gain more attention in $K_{\alpha_i,\alpha_j,p_i,p_j}^{\beta_i,\beta_j,n_i,n_j}$ by

$$K_{\alpha_i,\alpha_j,p_i,p_j}^{\beta_i,\beta_j,n_i,n_j} = \left\{ \varphi \in C^{\infty}\left(R^{d_i+d_j}\right) / \exists\, C_1 > 0\,,\right.$$

$$\sup_{\substack{-\infty<t_i<0 \\ 0<x_j<\infty}} \left| e^{a(t_1+---+t_m)+b(x_1+---+x_n)} j_\mu(t,x) D^l_{t_1+---+t_m} S^k_\mu \varphi(t_i, x_j) \right|$$

$$\leq C\ A_1^{a_1} --- A_m^{a_m} B_1^{l_1} --- B_n^{l_n}$$

$$\leq C_1 (p_i+\delta_i)^a (n_j+\eta_j)^b (p_i^*+\delta_i^*)^l (n_j^*+\eta_j^*)^k$$

$$l_1^{l_1\alpha_1} --- l_n^{l_n\alpha_n} b^{b\alpha_j} a_1^{a_1\alpha_1} --- a_m^{a_m\alpha_m} k^{k\beta_j} \}$$

For $i=1,---,m;\ j=1,---,n$ $\delta_i, \delta_i^*,\ \eta_j,\ \eta_j^*$ are any $m+n$ elements greater than zero lose the property of strongly continuity at $x_j=0,\ t_i=0$ being strongly continuous at $-\infty<t_i<0,\ 0<x_j<\infty$ equipped with their naturally Hausdrof locally convex countable topologies for each $m+n$ elements including for $i=1,---,m;\ j=1,---,n$ generated by their respective corresponding total families of seminorms as usal denoted by $T^{\beta_i,\ \beta_j, n_i,\ n_j}_{\alpha_i,\ \alpha_j, p_i,\ p_j}$ for the domain $0<x_j<\infty,\ 0<t_i<\infty$ and $\hat{K}^{\beta_i,\ \beta_j, n_i,\ n_j}_{\alpha_i,\ \alpha_j, p_i,\ p_j}$ for the domain $-\infty<t_i<0,\ 0<x_j<\infty$ possess several nuclear invariant convenient mapping properties in order to train built evaluate classifier on testing data under translation dilation by a positive factor between different classes spaces.

4. CONCLUSIONS

The approach of the work provides a better grasp for the concept of methodology for discovering various distributions by taking into consideration once again the Laplace Meijer transform by employing the relative testing function space successfully analysed from a topological point of view able to define sequential convergence in all above mentioned spaces so become sequentially complete interesting because of rich structure used in different domains of science, engineering & industrial demands.

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