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# Integration of modified multivariable H-function with respect to their parameters

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**Abstract:** The object of the present paper is to obtain some interesting results by integrating the modified multivariable H-function with respect to its parameters. Such integrals are useful in the study of certain boundary value problems.

## 1. Introduction

The modified multi-variable $H$-function employed as kernel of multi-dimensional transform defined by Prasad and Singh [5] on the lines of Srivastava and Panda [7], Prasad and Maurya [4] is as follows:

$$H^{m,n:|R':m_1,n_1;,\ldots;m_r,n_r}_{p,q:|R:p_1,q_1;\ldots;\ p_r,\ q_r}$$

$$\left[\begin{array}{c} z_1 \\ \vdots \\ z_r \end{array}\middle| \begin{array}{l} (a_j;\alpha'_j,\ldots,\alpha_j^{(r)})_{1,p}: (e_j;u'_j g'_j,\ldots,u_j^{(r)}g_j^{(r)})_{1,|R'}: (c'_j,\gamma'_j)_{1,p_1};\ldots;(c_j^{(r)},\gamma_j^{(r)})_{1,p_r} \\ (b_j;\beta'_j,\ldots,\beta_j^{(r)})_{1,q}: (l_j;U'_j f'_j,\ldots,U_j^{(r)}f_j^{(r)})_{1,|R}: (d'_j,\delta'_j)_{1,q_1};\ldots;(d_j^{(r)},\delta_j^{(r)})_{1,q_r} \end{array}\right]$$

$$=\frac{1}{(2\pi\omega)^r}\int_{L_1}\cdots\int_{L_r}\Phi\ (\xi_1)\ldots\Phi_r(\xi_r)\,\psi(\xi_1\ldots\xi_r)\,z_1^{\xi_1}\ldots z_r^{\xi_r}d\xi_1\ldots d\xi_r. \quad (1)$$

where $\omega=\sqrt{-1}$

$$\Phi_i(\xi_i)=\frac{\prod_{j=1}^{m_i}\Gamma\left(d_j^{(i)}-\delta_j^{(i)}\xi_i\right)\prod_{j=1}^{n_i}\Gamma\left(1-c_j^{(i)}-\gamma_j^{(i)}\xi_i\right)}{\prod_{j=m_i+1}^{q_i}\Gamma\left(1-d_j^{(i)}+\delta_j^{(i)}\xi_i\right)\prod_{j=n_i+1}^{p_i}\Gamma\left(c_j^{(i)}-\gamma_j^{(i)}\xi_i\right)}(i=1,2,\ldots,r) \quad (2)$$