

Poincare Journal of Analysis & Applications Vol. 11, No. 2 (2024), 107-122 ©Poincare Publishers DOI: 10.46753/pjaa.2024.v011i02.001 Online Published on 19. 07. 2024

SOME KEY PROPERTIES OF THE GENERALISED TRIPLE HYPERGEOMETRIC FUNCTION OF SRIVASTAVA'S

 $H_{A,p,\upsilon}(w_1, w_2, w_3; w_4, w_5; z_1, z_2, z)$

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Date of Receiving	:	22.	01.	2024
Date of Revision	:	21.	06.	2024
Date of Acceptance	:	22.	06.	2024

Abstract. With the help of the generalised Beta function $B_{p,v}(x, y)$, we are able to create a generalised version of Srivastava's triple hypergeometric function $H_A(\cdot)$ associated with a numerical approaximation table in this paper, along with its integral expressions. Furthermore, we list some of its key properties, including the Mellin transform, a partial derivative identity, recurrence relations, and a bounded inequality. We also provide some integral expressions of this generalised $H_{A,p,v}(\cdot)$ function that use Meijers's *G*-function, the product of the Macdonald and Gauss hypergeometric functions. In addition, we compute a numerical approximation table of this generalised hypergeometric function $H_{A,p,v}(\cdot)$ with bounds by Wolfram Mathematica and computer algebraic software or objected oriented programme.

1. Introduction, definitions and preliminaries

Many areas of mathematical physics, statistics, economics, and other disciplines have a long history of using hypergeometric functions of a single variable. For the value of $w_1, w_2 \in \mathbf{C}, w_3 \in \mathbf{C} \setminus \mathbf{Z}_0^-$, the Gauss hypergeometric function is defined by [17]

$${}_{2}F_{1}\left(\begin{array}{c}w_{1},w_{2}\\w_{3}\end{array};z\right) = \sum_{n=0}^{\infty} \frac{(w_{1})_{n}(w_{2})_{n}}{(w_{3})_{n}} \frac{z^{n}}{n!} \qquad (|z|<1).$$
(1.1)

This hypergeometric function extensions includes w_j $(1 \le j \le p, q)$, which also has so many wide application; see [23].

The literature that is currently available on hypergeometric series includes this series and its generalisations in a number of application-related branches of mathematics.

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²⁰¹⁰ Mathematics Subject Classification. 33C60, 33C70, 33C05, 65D20.

Key words and phrases. Bounded inequality, Srivastava's triple hypergeometric functions, Gauss hypergeometric function, Beta and Gamma functions, Bessel function, Meijer's *G*-function, Computational aspects of special functions.

Communicated by. Nikhil Khanna