

**A STUDY OF A NOVEL CATEGORY OF MACROBERT-STYLE
INTEGRALS INCORPORATING GENERALIZED
HYPERGEOMETRIC FUNCTIONS**

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Abstract: In 2018, Masjed-Jamei and Koepf established interesting and valuable generalizations of various classical summation formulas for the generalized hypergeometric series ${}_2F_1$, ${}_3F_2$, ${}_4F_3$, ${}_5F_4$ and ${}_6F_5$. Building on this work, in this study, we establish seven generalized hypergeometric integrals of the MacRobert-style using these summation theorems. In addition to that, we present several special cases to illustrate the applicability of our results in the literature, including the most recent contributions by Kulkarni et al.

Keywords and Phrases: Generalized Hypergeometric function, Summation theorem, MacRobert integral.

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1. Introduction

For any complex number $u \in \mathbb{C}$, the Pochhammer symbol or ascending factorial, introduced by Leo August Pochhammer [1, 25], is defined by