

FRACTIONAL INTEGRAL OF WHITTAKER k -FUNCTION AND ITS PROPERTIES

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(Received: Dec. 10, 2021 Accepted: Aug. 10, 2022 Published: Aug. 30, 2022)

Abstract: In this paper, we introduce a generalized form of Whittaker function with the help of generalized confluent k -hypergeometric function. We establish several interesting properties of the Whittaker k -function such as its integral representations, derivative, Laplace transform and Hankel transform. Further, we investigate the Riemann-Liouville fractional integral and k -Riemann-Liouville fractional integral of Whittaker k -function. Some intriguing particular cases of the main results are also mentioned.

Keywords and Phrases: k -Gamma function, k -Beta function, Confluent k -hypergeometric function, Whittaker function, Laplace transform, Hankel transform and Riemann-Liouville fractional integral.

2020 Mathematics Subject Classification: 33B15, 33C15, 26A33.

1. Introduction

Special Functions are remarkable for their significance and utilization in several domains, particularly in mathematical physics such as astronomy, string theory,