ON INTEGRAL OPERATOR INVOLVING MITTAG-LEFFLER FUNCTION

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Dedicated to Prof. M.A. Pathan on his 75th birth anniversary

Abstract: The main object of this article is to present an interesting double integral involving generalized Mittag-Leffler function, which is expressed in terms of generalized (Wright) hypergeometric function. Also we consider some special cases as an application of main result.

Keywords: Mittag-Leffler function, Generalized (Wright) hypergeometric function and Integrals.

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1. Introduction and Definition

The well known Mittag-Leffler function is defined as follows (see, [4]):

$$E_{\alpha}(z) = \sum_{k=0}^{\infty} \frac{z^k}{\Gamma(1+\alpha k)}, \tag{1.1}$$

where $\alpha \in C, \ \Re(\alpha) > 0, z \in C$ and its general form is given by

$$E_{\alpha,\beta}(z) = \sum_{k=0}^{\infty} \frac{z^k}{\Gamma(\beta+\alpha k)}, \tag{1.2}$$

where $\alpha, \beta \in C, \Re(\alpha) > 0, \Re(\beta) > 0, z \in C$ with C being the set of complex numbers which is known as Wiman function [10].