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ON TRANSFORMATION OF BASIC HYPERGEOMETRIC FUNCTIONS APPLYING FRACTIONAL q-DIFFERENTIAL OPERATOR

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Abstract: The object of this paper is to establish transformations in which a basic hypergeometric functions can be expressed as an infinite sum of functions of higher order by the application of fractional q-differential operator.Several well known hypergeometric functions and basic Kampė de Fėriet function are expressed as an infinite sum of basic hypergeometric functions.Some special cases can be deduced as the application of the main results.

Keywords and Phrases: Basic Hypergeometric Functions, fractional q–differential operator.

2020 Mathematics Subject Classification: 33D15, 26A33.

1. Introduction

The theory of Fractional Calculus operators has been developed widely and extensively by various mathematicians such as R. K. Yadav, S. D. Purohit [8]. In the present context, we propose to derive several transformations of Basic hypergeometric series by appropriately applying certain fractional q-operators in order to achieve our goals. Recently the authors (see [1], [8], [6]) have investigated several results on q-differential operator associated with basic hypergeometric functions. These results are new contributions to the theory of q-differential operator.