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# CERTAIN TRANSFORMATIONS INVOLVING POLY-BASIC HYPERGEOMETRIC SERIES

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**Abstract:** In this paper, making use of Bailey transform and certain known summation formulas an attempt has been made to establish transformation formulas for poly-basic hypergeometric series.

**Keywords and Phrases:** Summation formula, transformation formula, Bailey transform, poly-basic hypergeometric series.

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## 1. Introduction, Notations and Definitions

For real or complex $q(|q|<1)$, the q-shifted factorial is defined by,

$$[\alpha;q]_n = \begin{cases} 1, & \text{if} \quad n=0 \\ (1-\alpha)(1-\alpha q)(1-\alpha q^2)...(1-\alpha q^{n-1}), & \text{if} \quad n=1,2,3,... \end{cases}. \tag{1.1}$$

Also,

$$[\alpha;q]_\infty = \prod_{n=0}^{\infty}(1-\alpha q^n). \tag{1.2}$$

A basic hypergeometric function is defined as,

$${}_r\Phi_s\left[\begin{matrix} a_1,a_2,...,a_r;q;z \\ b_1,b_2,...,b_s;q^\lambda \end{matrix}\right] = \sum_{n=0}^{\infty}\frac{[a_1,a_2,...,a_r;q]_n z^n q^{\lambda n(n-1)/2}}{[q,b_1,b_2,...,b_s;q]_n}, \tag{1.3}$$