

Some Transformation Formulae of Ordinary Bilateral Hypergeometric Series

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Abstract: In the present paper, using the bilateral Bailey transform due to Andrews and Warnaar and certain known summation formulae, we have established some transformation formulae of ordinary bilateral hypergeometric series which are believed to be new. We have also discussed few special cases.

Keywords and phrases: Bailey transform, bilateral Bailey transform, summation formulae, transformation formulae, ordinary bilateral hypergeometric series.

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1. Introduction

Bailey [1] established a simple but a very useful transform called as Bailey transform: if

$$\beta_n = \sum_{r=0}^n \alpha_r u_{n-r} v_{n+r}$$

and

$$\gamma_n = \sum_{r=n}^{\infty} \delta_r u_{r-n} v_{r+n},$$

then

$$\sum_{n=0}^{\infty} \alpha_n \gamma_n = \sum_{n=0}^{\infty} \beta_n \delta_n$$

subject to conditions on the four sequences $\alpha_n, \beta_n, \gamma_n$ and δ_n which make all the relevant infinite series absolutely convergent.

The celebrated Bailey [1] transform was extensively used to obtain transformation formulae of ordinary hypergeometric series and basic hypergeometric series