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A TRANSFORMATION FORMULA FOR DOUBLE HYPERGEOMETRIC SERIES

R. P. SINGAL

Carlitz [4], Pandey and Saran [6] and the author [8], [9] gave a number of transformation formulae of Kampé de Fériet double hypergeometric series. Since transformation formulae play an important role, the object of this paper is to obtain a transformation formula for the double series and to derive two Cayley Orr type results and a Watson sum for the double series.

1. Kampé de Fériet double hypergeometric series [1] in the notation of [7] is defined as

$$F^{p,q}_{r,s}\left[\begin{matrix} a_p : b_q; b_q'; \\ c_r : d_s; d_s'; \end{matrix}\right] = \sum_{m,n=0}^{\infty} \frac{(a_p)_{m+n}(b_q)_m(b_q')_n}{(c_r)_{m+n}(d_s)_m(d_s')_n m! n!}$$

where $p + q \leqq r + s + 1$ and where a_p stands for the sequence $a_1, a_2, \cdots, a_p$; $(a)_m = \Gamma(a+m)/\Gamma(a)$.

The main result to be proved is

$$F^{1,3}_{1,2}\left[\begin{matrix} a : b, c, -n; d-b, c', -m; \\ d : e, 1+a+b+c-d-e-n; \\ e', 1+a+c'-b-e'-m; \end{matrix}\right]$$

$$(1.1) = \frac{(e-c)_n(e'-c')_m(e+d-b-a)_n(e'+b-a)_m}{(e)_n(e')_m(e+d-a-b-c)_n(e'+b-c'-a)_m}$$

$$\times F^{1,3}_{1,2}\left[\begin{matrix} d-a : d-b, c, -n; b, c', -m; \\ d : d+e-a-b, 1+c-e-n; \\ e'+b-a, 1+c'-e'-m; \end{matrix}\right].$$

2. **Proof of (1.1).**

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