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ON THE FACTORIZATION OF A CLASS OF DIFFERENCE OPERATORS[1]

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The differential equation for the Meijer G-function (generalized hypergeometric function) with respect to the argument z, [1], can be written in an elegant factored form using the differential operator $z(d/dz)$. Recently, [2], [3], it has been found that particular Meijer G-functions satisfy difference equations with respect to a parameter, and it is the purpose of this paper to deduce analogous factored forms for these difference equations.

Consider the function

$$G(x) = \frac{1}{2\pi i}\int_L z^s\Omega(s)K(s, x, y)ds, \tag{1}$$

$$\Omega(s) = \frac{\Gamma(c-s)\prod_{j=1}^{m}\Gamma(b_j-s)\Gamma(1-c+s)\prod_{j=1}^{k}\Gamma(1-a_j+s)}{\prod_{j=m+1}^{q}\Gamma(1-b_j+s)\prod_{j=k+1}^{p}\Gamma(a_j-s)}, \tag{2}$$

$$0 \leqq m \leqq q, \quad 0 \leqq k \leqq p; \qquad a_j \neq b_i, \quad 1 \leqq j \leqq k, \quad 1 \leqq i \leqq m,$$

$$K(s, x, y) = \Gamma(x+\delta s)/\Gamma(x+y+\epsilon s), \quad \epsilon \text{ and } \delta \text{ integers}, \ \delta \geqq 0, \tag{3}$$

where L is an infinite loop contour which separates the poles of $\Gamma(x+\delta s)\cdot\Gamma(1-c+s)\prod_{j=1}^{k}\Gamma(1-a_j+s)$ from those of $\Gamma(c-s)\prod_{j=1}^{m}\Gamma(b_j-s)$. Here and in what follows, we tacitly assume that the complex quan-

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