

## Production Matrices for Double Riordan Arrays

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A double Riordan array is an infinite lower triangular matrix, denoted by  $(g; f_1, f_2)$ , where  $g$ ,  $f_1$ , and  $f_2$  are generating functions. The coefficients of the generating function  $g$  gives the first column of the matrix, and the remaining columns are found by multiplying the previous column by alternating  $f_1$  and  $f_2$ . In other words,

$$(g; f_1, f_2) = (g, gf_1, gf_1f_2, gf_1^2f_2, gf_1^2f_2^2, \dots).$$

This is the columns construction of a double Riordan array. We can determine the elements of a double Riordan array using  $A$ - and  $Z$ - sequences which gives a row construction. In this talk we will define the production matrix of a double Riordan array, and show how it can be used to determine the  $A$ - and  $Z$ - sequences.

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