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RIORDAN ARRAYS VIA UMBRAL CALCULUS

We use the classical umbral calculus to define the Riordan group. We introduce a new Riordan subgroup which we call extended Bell subgroup. We give umbral expressions for the elements of the Appell, associated, Bell and extended Bell subgroups. To this end, we derive several useful identities which involve the primitive or derivative of the composition umbra. Our method consists of an adequate manipulation of exponential generating functions of umbrae. This is also used to derive two umbral versions of the Lagrange inversion formula recently introduced in the literature. Furthermore, we study the effects of several transformation rules on the entries of a Riordan array when regarded as functions of two integer variables.

This is joint work with José Agapito and Maria Manuel Torres.