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A family of Riordan group automorphisms. (English) Zbl 1431.05010

Summary: R. Bacher ["Sur le groupe d'interpolation", Preprint, arXiv:math/0609736] introduced a family of Riordan group automorphisms parametrized by three complex numbers. Bacher's family is a subgroup of the group of automorphisms of the Riordan group and so is the subfamily parametrized only by two real numbers. Here, we study some of the algebraic properties of this subfamily and use the elements to point out isomorphisms between Riordan subgroups. In this context, we prove that the set of Riordan arrays whose row sum sequence is a sequence of partial sums, forms a Riordan subgroup. Moreover, we show that the well-known recursive matrices may be constructed from sequences of images of a Riordan array under automorphisms. Our construction also discloses a correspondence between the recursive matrices and a pair of well-defined Riordan arrays.

MSC:
05A15 Exact enumeration problems, generating functions
05B20 Combinatorial aspects of matrices (incidence, Hadamard, etc.)
18A30 Limits and colimits (products, sums, directed limits, pushouts, fiber products, equalizers, kernels, ends and coends, etc.)
20E18 Limits, profinite groups
20H20 Other matrix groups over fields

Keywords:
Riordan group; Riordan subgroup; automorphism; isomorphism; bi-infinite triangle

Software:
OEIS

Full Text: Link

References:
[22] D. G. Rogers, Pascal triangles, Catalan numbers, and renewal arrays, Discrete Math. 22 (1978), 301-310. · Zbl 0398.05007
[28] S.

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