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Row Sums and Alternating Sums of Riordan arrays

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(Joint work with Louis Shapiro)

Here we use their row sum generating functions and alternating sum generating functions to characterize Riordan arrays and subgroups of the Riordan group. A numerous applications and examples are presented which include the construction of the Girard-Waring type identities. We also show several extensions to weighted sum (generating) functions and to the sum functions for some non-Riordan arrays, which give a different view for considering Bernoulli and Euler polynomial sequences. Finally, we use sum (generating) functions to derive conjugate Bernoulli and conjugate Euler polynomial sequences.