

Combinatorial moment sequences

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(This talk is partly based on joint work [1, 2] with Einar Steingrímsson and Slim Kammoun.)

Take your favorite integer sequence. Is this sequence a sequence of moments of some probability measure on the real line? We will look at a number of interesting examples (some proven, others merely conjectured) of moment sequences in combinatorics. We will consider ways in which this positivity may be expected (or surprising!), the methods of proving it, and the consequences of having it. The problems we will consider will be very simple to formulate, but will take us up to the very edge of current knowledge in combinatorics, ‘classical’ probability, and noncommutative probability.

- [1] N. Blitvić and E. Steingrímsson, Permutations, Moments, Measures. *Transactions of the American Mathematical Society*, Vol. 374, Number 8, August 2021, pp. 5473–5509.
- [2] N. Blitvić, S. M. Kammoun, E. Steingrímsson. A new perspective on positivity in (consecutive) permutation patterns. *Proceedings of the FPSAC 2023*, July 17-21, Davis CA.