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Asymptotics of and statistics on generalized Fishburn matrices

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Abstract

Generalized Fishburn matrices are upper-triangular matrices such that no row and no column contains exclusively zeros. They were introduced in the 1970's and later found to be bijectively equivalent to many other combinatorial structures. While their combinatorial properties have been extensively studied in the last few decades, the corresponding asymptotic and distributional aspects have been rarely addressed. We propose a very general analytic approach to the asymptotic enumeration and limiting distribution of major statistics defined on random Fishburn matrices, which are very effective in solving a few conjectures in the combinatorial literature, as well as clarifying the typical shapes of large random Fishburn matrices undera few different frameworks. This talk is based on joint work with Emma Yu Jin and Michael Schlosser.