

Statistical Problems Involving Permutations with Restricted Positions

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Abstract:

The rich world of permutation tests can be supplemented by a variety of applications where only some permutations are permitted. We consider two examples: testing independence with truncated data and testing extra-sensory perception with feedback.

We review relevant literature on permanents, rook polynomials and complexity. The statistical applications call for new limit theorems. We prove a few of these and offer an approach to the rest via Stein's method. Tools from the proof of van der Waerden's permanent conjecture are applied to prove a natural monotonicity conjecture.