

NEW FORMULAE RELATING FINITE GOE AND LUE — FROM NUMERICAL EXPERIMENTS
TO PROOFS

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Gap probabilities of finite-dimensional GOE can be expressed as Pfaffians of single integrals with jump discontinuities that severely bound the effectiveness of quadrature-based numerical methods. Starting from recursive relations with LUE that are either valid in the large matrix limit (due to Mehta and Cloizeaux) or hold for every second gap at even dimensions (due to Forrester), we have systematically explored candidates for the "missing" formulae through numerical experiments guided by heuristic arguments. While some of those candidates seem to be exact, other are still surprisingly accurate (and, therefore, probably useful) already for small dimensions even though they are only asymptotically exact. Proving the observed facts is ongoing work.