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Asymptotics For Lattice Paths Through Analytic Combinatorics

The topic of lattice path enumeration finds applications in a variety of areas, from queuing theory to statistical physics. Recent work on the behaviour of lattice walks restricted to quadrants combines a combinatorial tool called the kernel method with techniques from the field of analytic combinatorics in several variables (ACSV) to determine asymptotics of a large variety of models. In this talk we describe new results using this framework, going beyond past work by analyzing more pathological saddle-point integrals using new complex analytic techniques.