Applications of multiple orthogonal polynomials associated with moments that are ratios of products of gamma functions.

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I will discuss two applications of multiple orthogonal polynomials associated with moments that are ratios of products of gamma functions. The first one is in random matrix theory (squared singular values of products of random matrices) and the other one in Diophantine approximation problems. Recently, such polynomials also appeared in connection to the theory of branched continued fractions. The properties of particular cases of these polynomials have been studied throughout the years, e.g. certain Jacobi-Piñeiro polynomials by [Smet-Van Assche, 2010], the multiple orthogonal polynomials associated with the K-Bessel functions by [Van Assche-Yakubovich, 2000], with the confluent/Gauss' hypergeometric functions by [Lima-Loureiro, 2020/2021] and with the exponential integral by [Van Assche-Wolfs, 2022].

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