Recent Progress on Product of Random Matrices

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Abstract:
Random Matrices find many applications in Physics and Mathematics. I will review some recent progress in solving certain classes of finite products of random matrices of finite size for all eigenvalue correlations. Such a setup can be thought of as a model for linear time evolution. I will start from the simplest model of a single complex non selfadjoint random matrix also called Ginibre ensemble which can be solved using orthogonal polynomials in the complex plane. While its complex eigenvalues form a determinental point process their moduli become indepent random variables, given by a permanent. Generalisations to arbitrary products of such independent matrices follow.