

1098-22-193

Jonathan Novak* (jnovak@math.mit.edu), 77 Massachusetts Avenue, Cambridge, MA 02139.

How to integrate on $U(N)$.

Suppose f is a regular function on the unitary group $U(N)$. How can one compute the integral of this function against Haar measure? I'll explain a representation-theoretic method to accomplish this, which reduces the problem to counting certain walks on the Cayley graph of the symmetric group. This technique has applications in random matrix theory and asymptotic representation theory, which I will also explain if time permits. Extending these methods to non-uniform measures on $U(N)$, e.g. those coming from heat kernels, is an open problem which seems to be in reach. (Received January 25, 2014)