Title:
Unitary Correlations and the Fejer Kernel

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Abstract:

Let M be a unitary matrix with eigenvalues t_j, and let f be a function on the unit circle. Define $X_f(M) = \sum f(t_j)$. We derive exact and asymptotic formulae for the covariance of X_f and X_g with respect to the measures $|\chi(M)|^2 dM$ where dM is Haar measure and χ an irreducible character. The asymptotic results include an analysis of the Fejer kernel which may be of independent interest.