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Integration of Invariant Matrices and Applications to Statistics

Expressing the local and global moments of random matrices is a common problem in different fields such as Random Matrix Theory, Statistics and Finance. Due to the important role played by moments of random matrices, we obtain an expression for the local moments of a number of complex and real matrices. A formula for the moments of left-right orthogonal (unitary) random matrices is our main result and it enables us to obtain the moments of the inverted Compound Wishart matrices. Since Covariance matrices with correlated samplings are Compound Wishart matrices, this explains the importance of the Compound Wishart matrices essentially in Statistics. This is joint work with Benoit Collins and Sho Matsumoto.