1077-VJ-1903   **Steven J Miller*** (`sjm1@williams.edu`), Department of Mathematics and Statistics, Williams College, Williamstown, MA 01267-2680, and **Geoffrey S Iyer** (`geoff.iyer@gmail.com`), Department of Mathematics, Ann Arbor, MI. *Moment Formulas for Ensembles of Classical Compact Groups.*

As many problems in number theory are connected to the zeros of the Riemann zeta function, as well as more general L-functions, it is important to be able to predict their behavior. Random Matrix Theory has successfully modeled many of their properties. The Katz-Sarnak philosophy says that the behavior of L-functions near the central point (as conductors tend to zero) agrees with the behavior of eigenvalues near 1 of a classical compact group (as the matrix size tends to infinity).

Katz and Sarnak found a determinantal expansion that gives the exact behavior of eigenvalues near 1; however, this expansion is intractable for some statistics, and not useful for some advanced comparisons with number theory. Using combinatorics, generating functions and analysis we expand earlier work on orthogonal groups to symplectic and unitary, correcting an error in the literature and increasing the region where number theory and random matrix theory can be shown to agree. (Received September 21, 2011)