1077-37-427   **Sevak Mkrtchyan*** (`sm29@rice.edu`), Department of Mathematics - MS 136, Rice University, Houston, TX 77005. *Entropy of Schur-Weyl measures.*

Relative dimensions of the isotypic components of the N-th order tensor representations of the symmetric group on n letters give a Plancherel-type measure, called the Schur-Weyl measure, on the space of Young diagrams with n cells and at most N rows. We obtain logarithmic, order-sharp bounds for the maximal dimensions of the isotypic components of the tensor representations, and prove that the typical dimensions, after appropriate normalization, converge to a constant with respect to the family of Schur-Weyl measures in the limit when $N/\sqrt{n}$ converges to a constant. By analogy with the Shannon-Macmillan-Breiman theorem this constant represents the entropy of the Schur-Weyl measures.

We also obtain a new proof of Biane's theorem which states that scaled random Young diagrams with respect to the Schur-Weyl measure converge to a limit shape.

The main results were conjectured by G. Olshanski. Analogous results for the Plancherel measure were obtained by Vershik and Kerov (order-sharp bounds), and Bufetov (convergence to a constant). (Received August 31, 2011)

1