

1154-20-2101 **Persi Diaconis***, Department of Statistics, Sequoia Hall, 390 Serra Mall, Stanford, CA
94305-4020. *Tensor Product Markov Chains.*

Let G be a finite group. Decomposing tensor products leads to interesting, challenging, useful math problems. In joint work with Georgia Benkhart, Martin Liebeck, and Pham Tiep, applications to simple probability problems are found. Building on work of Fulman and the hypergroup community, fix a prime p and let \hat{G} be the p -modular irreducibles. Fix one say r and build a random walk on \hat{G} by 'from t tensor with r and pick a component of the tensor product with probability proportional to it's degree x multiplicity. Specialized to groups like $Sl(2, q)$ (with $q = p^a$), This gives 'easy to interpret' Markov chains which relate to Pitman's '2M-X' theorem and work of Bien, Bougeorl, O'Connell. Replacing q by Z/nZ leads to quantum groups. In all cases, the analysis required to give sharp rates of convergence to stationarity is challenging. (Received September 17, 2019)