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**Brian C Hall\*** (bhall@nd.edu), **Bruce K Driver** and **Todd Kemp**. *Random matrices in the general linear group.*

In light of the central limit theorem, the standard Gaussian random matrix models, such as the GUE and Ginibre ensembles, can be constructed as sums of small, independent random matrices. In my talk, I will discuss a “multiplicative” random matrix model constructed as a *product* of independent random matrices close to the identity. This model can be described as *Brownian motion in the general linear group*  $GL(N; \mathbb{C})$ .

In the large- $N$  limit, Brownian motion in  $GL(N; \mathbb{C})$  converges to Biane’s free multiplicative Brownian motion  $b_t$ . I will describe joint work with Bruce Driver and Todd Kemp in which we compute the Brown measure of  $b_t$ . The Brown measure of  $b_t$  is the natural candidate for the limiting eigenvalue distribution of Brownian motion in  $GL(N; \mathbb{C})$ .

The support of the Brown measure is a certain domain  $\Sigma_t$  in the plane, which is simply connected for  $t \leq 4$  and doubly connected for  $t > 4$ . The Brown measure itself displays a remarkably simple structure. The talk will be self-contained and have lots of pictures. (Received September 11, 2019)