1125-15-428 **Steven J Miller*** (`sjm1@williams.edu`). *Random Matrix Ensembles with Split Limiting Behavior.*

Random matrix theory has successfully modeled a variety of systems, from energy levels of heavy nuclei to zeros of the Riemann zeta function. One of the central results is Wigner's semi-circle law: the distribution of normalized eigenvalues for ensembles of real symmetric matrices converge to the semi-circle density (in some sense) as the matrix size tends to infinity. We introduce a new family of $N \times N$ random real symmetric matrix ensembles, the $k$-checkerboard matrices, whose limiting spectral measure has two components. All but $k$ eigenvalues are in the bulk, and their behavior, appropriately normalized, converges to the semi-circle as $N \to \infty$; the remaining $k$ are tightly constrained near $N/k$ and their distribution converges to the $k \times k$ hollow GOE ensemble (this is the density arising by modifying the GOE ensemble by forcing all entries on the main diagonal to be zero). Similar results hold for complex and quaternionic analogues. We are able to isolate each regime separately through appropriate choices of weight functions for the eigenvalues and then an analysis of the resulting combinatorics. This is joint work with Paula Burkhardt, Peter Cohen, Jonathan Dewitt, Max Hlavacek, Carsten Sprunger, Yen Nhi Truong Vu, Roger Van Peski, and Kevin Yang. (Received September 01, 2016)