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q-Chaos

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In this study we consider homogeneous polynomials of q-generalized circular variables for $-1 \leq q \leq 1$ and their operator space structure in the corresponding non-commutative L_p spaces, which turned out to be a complicated (or "chaotic") combinations of row and column Hilbert spaces.

The free case ($q = 0$) was considered recently by Junge, Parcet and Xu. We extend this result to $-1 < q < 1$ case by interpolation and end up with a similar result (allowing a "twist" inside). However, the results for the cases $q = \pm 1$ (CAR and CCR) are quite different in nature. We apply "decoupling" technique using Speicher's random matrix model to obtain a symmetrized version of the free case.

(joint work with Marius Junge)