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Higher notions of freeness

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Voiculescu's original definition (1985) of freeness of random variables was modelled on the free product of Hilbert spaces. This has turned out to be a very successful theory with connections to many other parts of mathematics and to other sciences.

In 1991 Voiculescu found a connection between free independence and random matrix theory. As there many examples of random matrix ensembles, these can be used as motivation to explore higher notions of freeness. I will give some recent results showing higher order freeness of matrix ensembles.

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