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Matrix models on the unitary or the orthogonal group

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Abstract

We prove the first order asymptotics of matrix integrals over the unitary and the orthogonal group; we show that up to rescaling these two families of integrals have the same limit and that this limit can be interpreted as a generating function for the enumeration of planar maps. This includes the famous Harich–Chandra–Itzykson–Zuber integral, but in fact any reasonable real-valued multi-matrix integral.

Joint work with B. Collins and E. Maurel-Segala.