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A Guionnet, VFR Jones and D Shlyakhtenko* (shlyakht@math.ucla.edu). *Random matrices, free probability, planar algebras and subfactors.*

Using a family of graded algebra structures on a planar algebra and a family of traces coming from random matrix theory, we obtain a tower of non-commutative probability spaces, naturally associated to a given planar algebra. The associated von Neumann algebras are II_1 factors whose inclusions realize the given planar algebra as a system of higher relative commutants. We thus give an alternative proof to a result of Popa that every planar algebra can be realized by a subfactor. (Received March 10, 2008)