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The central limit procedure for noncommuting random variables and applications

Abstract: We investigated the algebra of central limits of a fixed set of random variables in the (commutative and) noncommutative context and matrix valued version thereof. In the noncommutative framework states instead of traces provide new examples of complex gaussian variables such that the real part does no longer commute with the imaginary part. Using this procedure, we may embed the operator Hilbert space (a central object in the theory of operator spaces introduced by Pisier) in a noncommutative L_1 space and calculate the operator space analogue of the projection constant of the n -dimensional Hilbert space.