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Tracially Central sequences

A central sequence in a C^* -algebra is a sequence that asymptotically commutes in norm with every element of the algebra. Similarly we have a definition of central sequences for II_1 factors, where the convergence is now in the L^2 -norm associated with the trace. It is well known that the group von Neumann algebra of the free group on two generators has only trivial central sequences. On the other hand, the reduced C^* -algebra of the free group on two generators has an abundance of central sequences. To solve this dichotomy we introduce a new notion of central sequences, the tracially central sequences. We believe that the notion of tracially central sequence should replace the notion of central sequences in a C^* -algebra. In fact we show that if A is a simple, stably finite, unital, separable C^* -algebra, which has strict comparison of positive elements and a unique tracial state, and if in addition A satisfies an extra condition, then the tracially central algebra of A coincides with the central algebra of the von Neumann algebra associated to the Gelfand-Naimark-Segal representation of A .