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*Quasiorthogonality of *-subalgebras*

Two unital *-subalgebras \mathcal{A} and \mathcal{B} of M_n cannot be orthogonal since they both contain the identity. However, they can be thought of as *quasi*-orthogonal in a natural way: if $\mathcal{A} \cap \{I\}^\perp$ and $\mathcal{B} \cap \{I\}^\perp$ are orthogonal in the trace inner product. This motivates several equivalent formal definitions of quasiorthogonality. We investigate the quasiorthogonality of commutative *-algebras. We introduce the new notion of a 'quasiabile' matrix, which allows us to derive a new matrix-theoretic technique to compute the quasiorthogonality measure between pairs of commutative algebras, and we show how this approach can be extended to the general non-commutative case.

This is joint work with Sooyeong Kim, David Kribs, Edison Lozano, and Rajesh Pereira.