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**Sinopsis**

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Let  $f_1, f_2, \dots, f_n$  be a family of independent copies of a given random variable  $f$  in a probability space  $(\Omega, \mathcal{F}, \mu)$ . Then, the following equivalence of norms holds whenever  $1 \leq q \leq p < \infty$ ,  $(\int_{\Omega} [\sum_{k=1}^n |f_k|^q]^{\frac{p}{q}} d\mu)^{\frac{1}{p}} \sim \max_{r \in \{p,q\}} \{ n^{\frac{1}{r}} (\int_{\Omega} |f|^r d\mu)^{\frac{1}{r}} \}$ . The authors prove a noncommutative analogue of this inequality for sums of free random variables over a given von Neumann subalgebra. This formulation leads to new classes of noncommutative function spaces which appear in quantum probability as square functions, conditioned square functions and maximal functions.

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