

Markus B. Fröb: News on relative entropy

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I present recent work on a new integral representation for the relative entropy (or Kullback-Leibler divergence) for general tracial von Neumann algebras, generalizing results for matrix algebras. This representation allows easy proofs of its properties such as joint convexity and an extended version of the data processing inequality, namely monotonicity under positive unit-preserving maps. Moreover, it can be used to define Csiszár's f -divergences for von Neumann algebras, which depend on an arbitrary convex function f , and which give the relative entropy in the special case $f(x) = x \ln x$. Joint work with Ricardo Correa da Silva, Gandalf Lechner, and Leonardo Sangaletti.