# Quantum entropy derived from first principles

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The most fundamental properties of quantum entropy are derived by considering the union of two ensembles. We discuss the limits these properties put on any entropy measure and obtain, within reasonable interpretations, that they uniquely determine the form of the entropy functional up to normalisation. In particular, the result implies that all other properties of quantum entropy may be derived from these first principles.

**Keywords:** quantum entropy, ensembles.

# References

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