Shannon entropy type inequalities: an overview

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Given a real random vector with density f on $\mathbb{R}^n$ its Shannon differential entropy is given by the formula $h(X) = -\int f \log f$. During the lecture we will briefly discuss the history of entropy and give an overview of the most important inequalities involving this notion. Finally, I will mention some of our recent results contributing to this field of research, based on joint works with Maciej Białobrzeski, James Melbourne and Cyril Roberto, see [1, 2]

References

[1] M. Białobrzeski, P. Nayar, Rényi entropy and variance comparison for symmetric log-concave random variables, *IEEE Trans. Inform. Theory*, **69(6)**, 2023, 3431—3438.

[2] J. Melbourne, P. Nayar, C Roberto, Minimum entropy of a log-concave variable for fixed variance, preprint, 2024, arXiv:2309.01840