LOG-CONCACITY AND DISCRETE DEGREES OF FREEDOM

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We develop the notion of discrete degrees of freedom of a log-concave sequence and use it to prove that geometric distribution minimises Rényi entropy of order infinity under fixed variance, among all discrete log-concave random variables in Z.

We also show that the quantity $\mathbb{P}(X = \mathbb{E}X)$ is maximised, among all ultra-log-concave random variables with fixed integral mean, for a Poisson distribution. Based on joint work with Daniel Murawski, Piotr Nayar and Semen Słobodianiuk.