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Section:

12. Probability and Statistics

1991 MS Classification: 49, 60
Nilsson, Marcus, Växjö University

Finite Probability Sequences of Large Entropy

Finite probability sequences of large Shannon entropy is considered. We study a weighted average of a finite sequence of real numbers where the weights forms a probability sequence. If the entropy of this probability sequence is large we will see that the weighted average is close to the arithmetic mean. We also calculate the mean and variance of the entropy, when the probability sequence are distributed according to the Dirichlet distribution. Finally we investigate the connection between small variation and large entropy. Specially asymptotical behaviour is derived when the number of elements of the probability sequence is large.

Reference: Marcus Nilsson, Finite Probability Sequences of Large Entropy, *Reports from Växjö University - Mathematics, natural sciences and technology.* No. 9, 1998.