

On q -Non-extensive Statistics with Non-Tsallisian Entropy

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Abstract : We combine an axiomatics of Rényi with the q -deformed version of Khinchin axioms to obtain a measure of information (i.e., entropy) which accounts both for systems with embedded self-similarity and non-extensivity. We show that the entropy thus obtained is uniquely solved in terms of a one-parameter family of information measures. The ensuing maximal-entropy distribution is phrased in terms of a special function known as the Lambert W-function. We analyze the corresponding 'high' and 'low-temperature' asymptotics and reveal a non-trivial structure of the parameter space.

Keywords : multifractals, Rényi information entropy, THC entropy, MaxEnt, heavy-tailed distributions

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