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

Authors : Petr Jizba, Jan Korbel

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 maximalentropy 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

Conference Title : ICSP 2015 : International Conference on Statistical Physics

Conference Location : Prague, Czechia

Conference Dates : October 05-06, 2015