

Self-similarity degree of deformed statistical ensembles

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We consider self-similar statistical ensembles with the phase space whose volume is invariant under the deformation that squeezes (expands) the coordinate and expands (squeezes) the momentum. Related probability distribution function is shown to possess a discrete symmetry with respect to manifold action of the Jackson derivative to be a homogeneous function with a self-similarity degree q fixed by the condition of invariance under $(n + 1)$ -fold action of the dilatation operator related. In slightly deformed phase space, we find the homogeneous function is defined with the linear dependence at $n = 0$, whereas the self-similarity degree equals the gold mean at $n = 1$, and $q \rightarrow n$ in the limit $n \rightarrow \infty$. Dilatation of the homogeneous function is shown to decrease the self-similarity degree q at $n > 0$.