

Abstract for GR-TR Conference on Statistical Mechanics and Dynamical Systems

Talk Invited

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Thermodynamic derivation of entropy of complex systems

Stefan Thurner^{*}, Rudolf Hanel

Section for Science of Complex Systems, Medical University of Vienna, Spitalgasse
23 1090 Vienna, Austria

^{*} Electronic Address: thurner@univie.ac.at

Following a thermodynamical argument - i.e. understanding the consequences of bringing interacting systems in thermal contact - we derive a two-parameter entropy. It is shown to cover practically all interacting and non-interacting statistical systems. The corresponding distribution functions are explicitly presented. Special regions in the two-parameter space correspond to Boltzmann-Gibbs statistics, Tsallis statistics and regions characterized by stretched exponential distribution functions. To our knowledge the proposed method can be seen as a first derivation of generalized entropies from first thermodynamical principles.