Hungarian-German WE-Heraeus Seminar



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Nonadditive entropies –From quantum-tunneling chemical reactions to cosmology

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The adoption of nonadditive entropies enables the generalization of Boltzmann-Gibbs (BG) statistical mechanics, one of the pillars of contemporary theoretical physics. It also leads to a generalization of the celebrated Central Limit Theorem in Theory of Probabilities. These facts constitute a rational basis to explain a myriad of complex phenomena that overcome the BG scenario. We will show illustrations in granular matter, cold atoms in dissipative optical lattices, high-energy collisions at LHC/CERN and elsewhere, quantum-tunneling chemical reactions, dissipative and conservative nonlinear dynamical systems, plasma, long-range-interacting Hamiltonian as well as overdamped many-body systems, black holes, neutrinos, dark matter, and related cosmological issues. Bibliography at https://tsallis.cbpf.br/biblio.htm

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