Special Issue

Particle Theory Meets Entropy: High-Energy Physics, Entanglement and Space-Time

Message from the Guest Editor

This Special Issue focuses on intersections between Particle Physics and Thermodynamics, aiming to demonstrate the rich, currently ongoing research in this field, and, hopefully, future paradigm-changing results. In Particle Physics, *entanglement* was first introduced as an irreducibly quantum aspect of nature. Then, it was recognized as strictly related to *quantum Neumann entropy*, hence bridging quantum information, quantum thermodynamics, and classical world emergence from quantum laws. Particle Physics set on a curved background reveals a link between quantum gravitation effects and thermodynamic quantities: the discovery of Hawking radiation, and the temperature and entropy of black holes, paved the way to exploring unprecedented visions of gravity, cosmology, and elementary particle gauge theories. Here, we aim to collect various theoretical and experimental contributions from the border between Particle Physics and Thermodynamics. The fields of interest for this Special Issue include, but are not limited to:

- black hole thermodynamics and holography
- emergence of spacetime
- EPR paradox
- thermodynamics of QCD fluids
- quantum information

Guest Editor

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Message from the Editor-in-Chief

The concept of entropy is traditionally a quantity in physics that has to do with temperature. However, it is now clear that entropy is deeply related to information theory and the process of inference. As such, entropic techniques have found broad application in the sciences.

Entropy is an online open access journal providing an advanced forum for the development and/or application of entropic and information-theoretic studies in a wide variety of applications. *Entropy* is inviting innovative and insightful contributions. Please consider *Entropy* as an exceptional home for your manuscript.

Editor-in-Chief

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