



Contribution ID: 216

Type: **Parallel session talk**

What is the correct definition of entropy for general relativistic field theory?

Tuesday 22 August 2023 17:00 (20 minutes)

Entropy is the most innovative concept in thermodynamics. However, it seems that entropy has been defined and computed conveniently in each context, and that a unified definition of entropy for general relativistic field theory has not been established.

Recently, the author and collaborators have proposed a unified method to construct entropy current and entropy density as a conserved current and a conserved charge density, respectively, for general field theory defined on general curved spacetime with covariantly conserved energy momentum tensor even without global symmetry. An important consequence of the proposal is that the entropy computed by the proposed method for a couple of classic gravitational systems satisfies both the local Euler's relation and the first law of thermodynamics non-perturbatively with respect to the Newton constant. Other important aspects will be also reported within allowed time.

Collaboration / Activity

This work was done by myself.

Primary author: YOKOYAMA, Shuichi (Ritsumeikan University)

Presenter: YOKOYAMA, Shuichi (Ritsumeikan University)

Session Classification: T11 Quantum Field and String Theory

Track Classification: Quantum Field and String Theory