Contribution ID: **24** Type: **not specified**

Weyl cohomology and the conformal anomaly in the presence of torsion

Wednesday, 11 September 2024 11:45 (25 minutes)

Using cohomological methods, we identify both trivial and nontrivial contributions to the conformal anomaly in the presence of vectorial torsion in d = 2, 4 dimensions. In both cases, our analysis considers two scenarios: one in which the torsion vector transforms in an affine way, i.e., it is a gauge potential for Weyl transformations, and the other in which it is invariant under the Weyl group. An important outcome for the former case in both d = 2, 4 is the presence of anomalies of a "mixed"nature in relation to the classification of Deser and Schwimmer. For invariant torsion in d = 4, we also find a new type of anomaly which we dub Ψ-anomaly. Taking these results into account, we integrate the different anomalies to obtain renormalized anomalous effective actions. Thereafter, we recast such actions in the covariant nonlocal and local forms, the latter being easier to work with. Along the way, we pause to comment on the physical usefulness of these effective actions, in particular to obtain renormalized energy-momentum tensors and thermodynamics of 2d black holes.

Primary author: PACI, Gregorio (Istituto Nazionale di Fisica Nucleare)

Presenter: PACI, Gregorio (Istituto Nazionale di Fisica Nucleare)