

Global conserved quantities and unfree gauge symmetry

Wednesday, 13 October 2021 11:45 (15 minutes)

We consider a class of theories with unfree gauge symmetry, such that gauge parameters are restricted by differential equations. This class of theories is shown to admit global conserved quantities, whose on-shell values are defined by asymptotics of the fields rather than Cauchy data. A systematic way is proposed for deducing the global conserved quantities proceeding from the equations restricting the gauge parameters. The simplest example of such conserved quantity is the cosmological constant of unimodular gravity. We demonstrate the analogues for various higher spin field theories. The theories with unfree gauge symmetry can be self-consistently described by two different BRST complexes. One of them corresponds to the unfree gauge symmetry as such, while another one is connected with the alternative description of the same symmetry with reducible gauge transformations with unrestricted gauge parameters. These two descriptions are related, but not equivalent. For the first BRST complex, the global conserved quantities are BRST exact, and for the second one, they are BRST closed, but non-trivial.

Primary authors: Ms ABAKUMOVA, Victoria (Tomsk State University); Dr KARATAEVA, Inna (Tomsk State University); Prof. LYAKHOVICH, Simon (Tomsk State University)

Presenter: Ms ABAKUMOVA, Victoria (Tomsk State University)

Session Classification: Theoretical Physics

Track Classification: Theoretical Physics