

Stable interactions between higher derivative extended Chern-Simons and charged scalar field

Tuesday, 16 April 2019 15:30 (15 minutes)

We consider inclusion of interactions between two different derived field theories. One of them is supposed to be gauge invariant. At free level, the wave operator of derived-type theory is the polynomial of the primary operator that is of the lower order. Every symmetry of the primary operator results in series of higher order symmetries of the field equations of the derived model that, in its turn, gives rise to the series of independent conserved tensors. Particularly, the translation invariance of primary operator results in the series of conserved tensors of the derived theory including canonical energy-momentum. Even if the canonical energy is unbounded, the other conserved tensors in the series can be bounded. If such bounded conserved quantities exist, the theory is considered stable. In this case, we can include stable interactions with inevitably non-Lagrangian interaction vertices. The general construction is exemplified by the most general gauge invariant extended Chern-Simons theory of arbitrary finite order coupled to the Pais-Uhlenbeck-type higher derivative complex scalar field.

Primary author: Ms ABAKUMOVA, Victoria (Tomsk State University)

Co-authors: Dr KAPARULIN, Dmitry (Tomsk State University); Prof. LYAKHOVICH, Simon (Tomsk State University)

Presenter: Ms ABAKUMOVA, Victoria (Tomsk State University)

Session Classification: Theoretical Physics

Track Classification: Theoretical Physics