Contribution ID : **260** Type : **Oral talk**

Landau-Khalatnikov-Fradkin transformation and a mystery of even zeta-values

Wednesday, 30 November 2022 19:00 (15)

The Landau-Khalatnikov-Fradkin (LKF) transformation is a powerful and elegant transformation allowing to study the gauge dependence of the propagator of charged particles interacting with gauge fields. With the help of this transformation, we derive a non-perturbative identity between massless propagators in two different gauges. From this identity, we find that the corresponding perturbative series can be exactly expressed in terms of a hatted transcendental basis that eliminates all even Euler zeta-functions. This explains the mystery of even zeta-values observed in multi-loop calculations of Euclidean massless correlators for almost three decades now. Our construction further allows us to derive an exact formula relating hatted and standard zeta-functions to all orders of perturbation theory.

Primary author(s) : Dr. KOTIKOV, Anatoly; Dr. TEBER, Sofian

Presenter(s) : Dr. KOTIKOV, Anatoly

Session Classification : High Energy Physics: Theory

Track Classification : High energy physics: theory