Contribution ID: **9**   Type: **not specified**

Two-loop integrals for top-pair production plus a W boson

Monday 10 November 2025 15:00 (30 minutes)

The associated production of a top-antitop quark pair with a W boson is one of the heaviest signatures probed at the LHC. The corresponding rates have been found to be consistently higher than the Standard Model predictions, calling for improved theoretical predictions.

In this talk I will discuss one of the main bottlenecks for the exact computation of the two-loop QCD amplitude, namely the Feynman integrals. I will discuss a method for evaluating the integrals by computing and solving the systems of differential equations they satisfy. I will present strategies to address the complexity of the computation, which involves complicated analytic structures, such as nested square roots and elliptic functions, and expressions with an high degree of algebraic complexity.

Presenter: POZZOLI, Mattia

Session Classification: Applied Mathematics for Feynman Calculus