

HADRONS
2025 Porto Alegre
• • • XVI International Workshop on Hadron Physics
10-14 Mar | Centro Cultural da UFRGS

Invited speakers

Kenji Fukushima
The University of Tokyo

Chun Shen
Wayne State University

Lisheng Geng
Beihang University

Fernanda Steffens
University of Bonn

National Committee

Kanchan Khemchandani (UNIFESP)
Jun Takahashi (UNICAMP)
Letícia Palhares (UERJ)
Luciano Abreu (UFBA)
Ricardo Sonego Farias (UFSM)
Victor Gonçalves (UFPel)
Tiago Nunes (UFSC)

Organizing Committee

Victor Gonçalves (UFPel) - Chair
Gustavo Gil da Silveira (UFRGS)
Magno Machado (UFRGS)
Ricardo Sonego Farias (UFSM)

Registrations open from
10 Aug 2024 to 14 Feb 2025
<https://indico.cern.ch/e/hadrons2025>

if **PPG FÍSICA UFRGS** **FAPESP** **CAPES** **FAPERGS**



Começar (Iniciar) 10 de mar. de 2025 09:00
Fim 14 de mar. de 2025 19:00

America/Sao_Paulo



Centro Cultural - UFRGS
Jacarandá Auditorium
Rua Eng. Luiz Englert, 333 - Porto Alegre-RS
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[Victor Goncalves](#)



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ID da Contribuição: 40

Tipos: **Poster**

Parametrization of perturbative QCD in hadronic tau decays

terça-feira, 11 de março de 2025 18:16 (2 minutos)

The determination of the strong coupling, α_s , from the theoretical description of inclusive hadronic tau decays in Quantum Chromodynamics (QCD), is one of the most precise extractions from experimental data. The theoretical description is dominated by perturbation theory but receives non-perturbative contributions from the Operator Product Expansion and duality violations, which cannot be neglected. The standard approach is to build sum rules where the QCD contribution is evaluated as closed-contour integrals in the complex plane. However, this method introduces complications related to the renormalization scale, notably in the perturbative series. Therefore, with its inherent complexity, the state-of-the-art five-loop QCD description is non-trivial. Although these complications are unavoidable in a realistic, high-precision analysis, it would be desirable to have a much simpler but reliable parametrization of the QCD result, including all correlations, to provide a simple interface with precision Electroweak Fits and Monte Carlo simulations for future accelerators, such as the FCC-ee. Furthermore, this parametrization could be applied in various fits where constraints from hadronic tau decays are of significant interest. In this work, we perform a parametrization for the perturbative QCD part, aiming to simplify the integration of theoretical predictions and check if this new version maintains the precision required.

Autores: BOITO, Diogo; OLIVEIRA, Rita (Universidade de São Paulo)

Apresentador: OLIVEIRA, Rita (Universidade de São Paulo)

Classificação da Sessão: Poster session