

10 de dezembro de 2024 - 16h00 - Sala F-210 (IFSC/USP)

"High Energy Physics" – QCD coupling from an improved vector-isovector spectral function using Tau and Electroproduction Data

# HIGH ENERGY PHYSICS SEMINARS

"QCD COUPLING FROM AN  
IMPROVED VECTOR-  
ISOVECTOR SPECTRAL  
FUNCTION USING TAU AND  
ELECTROPRODUCTION DATA"

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**DEZEMBRO - 10**

**16h**

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## ABSTRACT

The determination of the Quantum Chromodynamics (QCD) coupling,  $\alpha_s$ , from the theoretical description of inclusive hadronic tau decays, dominated by perturbative QCD, is one of the most precise  $\alpha_s$  extractions from experimental data. In this work, we demonstrate that the vector spectral function can be improved, on the data side, through a combination of tau decay data for the dominant channels and the use of  $e^+e^- \rightarrow \text{hadrons}$  cross sections, related by isospin symmetry, to describe the small contributions of subdominant modes. With this improved vector-isovector spectral function, we will perform a new  $\alpha_s$  determination at the  $\tau$ -mass scale.

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