

Seminário, Terça-feira 23/05/2023 14:00h

Local: Auditório: Méson Pi - DRCC

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Titulo: "New tools for scrutinizing the Standard Model result for the muon $g-2$ "

Abstract: The anomalous magnetic moment of the muon, or simply $g-2$, is known nowadays with an astonishing precision of 0.46 parts per million. The Standard Model (SM) result for this quantity obtained from the combination of theoretical calculations and input from hadronic cross-section data shows a tension of 4.2 standard deviations with the experimental results. Recently, results from lattice QCD, obtained by the BMW collaboration, for the hadronic vacuum polarization contribution to $g-2$ became available. With these lattice results, the SM determination of $g-2$ becomes compatible with experiment. Understanding the discrepancies between experiment and theory, and between the data-driven and lattice computations in $g-2$, is a crucial task in particle physics. In this talk, after a discussion of the status of the SM determination of $g-2$, I will discuss new sum rules that we have recently introduced for scrutinizing the SM calculation of this quantity, comparing data-driven and lattice approaches and allowing for the use of hadronic tau decay data to further improve the SM determination. I will also discuss our recent data-driven computation of specific contributions to $g-2$ that provide new benchmarks for the comparison with present and future lattice-QCD results.