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Effectively Exploring New Physics: EFT interpretation of ATLAS Run-2 data on the $WZ \rightarrow \ell\ell\nu\ell$ channel

Tuesday 10 June 2025 14:45 (15 minutes)

In the framework of the Standard Model Effective Field Theory (SMEFT), the Standard Model can be seen as a low-energy approximation of a deeper, more fundamental theory that introduces new heavy particles at a higher energy scale, Λ . By integrating out these beyond-the-Standard-Model (BSM) particles, SMEFT offers a model-independent way to describe their potential effects.

This talk focuses on electroweak processes involving the coupling of the W and Z bosons, where both bosons decay into leptonic final states. These processes provide a key window to probe anomalous triple gauge couplings (aTGCs), which could hint at physics beyond the Standard Model. The ATLAS Run-2 dataset, with 139 fb^{-1} of data, offers a powerful opportunity to explore these effects.

This talk will present 1D constraints on the SMEFT operators most sensitive to these interactions, as well as novel 2D limits that constrain pairs of SMEFT operators simultaneously. These results help us better understand potential deviations from the Standard Model and bring us one step closer to uncovering new physics.

Keyword-1

Experimental Particle Physics

Keyword-2

Beyond the Standard Model

Keyword-3

ATLAS Experiment

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