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Probing new physics using Standard Model Effective Field Theory

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In the quest for new physics (NP), due to the lack of any direct evidence, the framework of Effective field theory (EFT) becomes an indirect and consistent way to parametrise NP effects in terms of higher dimension operators. Among the observables with the potential to account for NP signatures, Electroweak Precision Observables (EWPO) and those from Higgs productions and decays play an important role. In this talk, I will discuss the modifications induced by the Standard Model Effective Field Theory (SMEFT) Warsaw basis dimension-6 operators on different observables related to the electroweak sector. I will present the model-independent constraints obtained from the global fit performed using the EWPO, single and di-Higgs data, as well as distributions from the di-boson production channels. In addition, I will discuss the constraints imposed on the BSM extensions by the considered data via SMEFT matching.

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