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Scheming in the SMEFT

Thursday, 6 July 2017 12:15 (15 minutes)

We discuss the constraints on the Standard Model Effective Field Theory inferred from global fits to electroweak data. In particular, we focus on two unconstrained combinations of Wilson coefficients that are present when the analysis is restricted to measurements of $\bar{\psi}\psi \to \bar{\psi}\psi$ scatterings. We show how these unconstrained directions arise due to a reparameterization invariance that characterizes $\bar{\psi}\psi \to \bar{\psi}\psi$ processes but is not respected in $\bar{\psi}\psi \to \bar{\psi}\psi\bar{\psi}\psi$ scatterings. Finally, we demonstrate that this invariance is independent of the choice of the input parameters, comparing the results obtained in the $\{\hat{\alpha}_{\rm em}, \hat{m}_Z, \hat{G}_F\}$ input scheme with those of a $\{\hat{m}_W, \hat{m}_Z, \hat{G}_F\}$ scheme, which we develop here. The talk is based on hep-ph/1701.06424.

Experimental Collaboration

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