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The electroweak rho parameter and the W boson mass in the NMSSM at two-loops

Thursday 28 September 2023 16:00 (22 minutes)

We present the prediction of the electroweak ρ parameter and the W boson mass in the CP-violating Next-to-Minimal Supersymmetric extension of the Standard Model (NMSSM) at the two-loop order. The ρ parameter is calculated at the full one-loop and leading and sub-leading two-loop order $\mathcal{O}(\alpha + \alpha_t\alpha_s + (\alpha_t + \alpha_\lambda + \alpha_\kappa)^2)$. The new $\Delta\rho$ prediction is incorporated into a prediction of M_W via a full supersymmetric (SUSY) one-loop calculation of Δr. We show some first phenomenological applications with the emphasis on the importance of a proper combination with the known SM higher-order corrections.

Summary

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