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Recent developments in NMSSMCALC (15'+3') [remote]

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Supersymmetry is among the most promising BSM frameworks solving many of the SM's theoretical and experimental shortcomings as well as providing a rich phenomenology across all sectors of the theory. The Next-to-Minimal-Supersymmetric-Standard-Model (NMSSM) is a natural successor of minimal supersymmetry providing a richer phenomenology in many regards such as e.g. more sources of CP-violating, scalar states lighter than the SM-like Higgs boson or additional dark matter candidates, to name a few. In order to scrutinize the NMSSM parameter space, precise predictions for a variety of observables within given scenarios are required. The program NMSSMCALC is addressing this demand by implementing precision calculations within the Higgs- and electroweak sector which are continuously improved and extended to match the experimental accuracy. Therefore, NMSSMCALC allows to confront a given benchmark-scenario with experimental observations and check its validity with high confidence.

In this talk we will present recent developments in NMSSMCALC that extend its portfolio by precision predictions for low-energy observables such as the W-boson mass, the muon anomalous magnetic moment or electric dipole moments. Furthermore, we report on improvements for precision predictions in the Higgs sector. Predictions for both, the Higgs boson masses and effective trilinear Higgs couplings have been recently improved at the two-loop level. We discuss the impact of loop-corrected couplings and masses on Higgs-to-Higgs decays, as computed by NMSSMCALC and demonstrate their potential to reduce the theoretical uncertainty of the Higgs boson pair production cross-section.

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