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Precise Higgs-mass predictions in the Next-to-Minimal Supersymmetric Standard Model

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The NMSSM represents an elegant and well motivated description for the observed Higgs-like particle at the LHC. In this theory a scalar singlet together with its superpartner is added to the Higgs-sector of the Minimal Supersymmetric Standard Model (MSSM). Compared to the MSSM the NMSSM provides a better description of the observed phenomenology including even the observed diboson excess at 750 GeV. Significant testing of the NMSSM by experimental measurements requires high-precision predictions for the parameters of the theory.

This talk will focus on the Higgs-mass predictions in the NMSSM at two-loop order obtained with Feynman-diagrammatic methods. The phenomenological impact of the genuine NMSSM contributions are discussed and compared to their MSSM counterparts. The presented results will be included in the upcoming NMSSM extension of the code FeynHiggs. This extension will be motivated and compared with other publicly available tools.

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