

Semi-automated two-loop calculations at the example of Higgs masses in the MSSM

Thursday, 1 October 2015 14:30 (15 minutes)

Two-loop calculations with non-trivial renormalization are necessary for the determination of high-precision theory predictions of experimentally well-known quantities. A famous example is the mass of a Higgs-like particle which has been measured at the LHC with a precision at the sub-percent level. A possible interpretation of this particle is given by the Minimal Supersymmetric Standard Model (MSSM) as one of its five physical Higgs bosons. A precise prediction of the Higgs spectrum in the MSSM relies on higher-order corrections. The main focus of this talk is set on the conceptual implementation in seven distinct steps of the top Yukawa coupling enhanced two-loop corrections to the Higgs spectrum in the complex MSSM. Each step is specific to the contribution computed here, but due to its modular structure the code can be adapted with little effort for similar calculations.

The complete code is part of the publicly available program FeynHiggs.

Primary authors: Dr PASSEHR, Sebastian (DESY); Dr HAHN, Thomas (Max Planck Institute for Physics)

Presenter: Dr PASSEHR, Sebastian (DESY)

Session Classification: Particle Phenomenology