



Contribution ID: 14

Type: **not specified**

Choosing the On-Shell Renormalization Scheme in the Complex MSSM

Tuesday, 31 July 2018 15:00 (30 minutes)

Choosing OnShell Renormalization Scheme in the Complex MSSM.

We analyze the possible choices of on-shell (OS) renormalization schemes (RS) in the chargino/neutralino sector of the the Minimal Supersymmetric Standard Model with complex parameters (cMSSM). These RS have been implemented in the FeynArts/FormCalc (FA/FC) package. However, the specific choice needs to be set manually by the user, often without rigorous criteria. Our analysis will allow to automate this choice and implement it into FA/FC, allowing to set the optimal choice of conditions which define the most convenient RS for any set of parameters. As is well known, each choice of OS-RS fails to converge for certain supersymmetric parameters. Any scan over a wide range of parameters may have to switch between different RS. It is therefore necessary to obtain the conditions under which any of those RS converges. We analyze several processes involving charginos and neutralinos at the one loop level for all possible OS-RS choices as a function of the relevant supersymmetric parameters, and compare these results with those already obtained for the one-loop mass shifts. A key issue for any parameter scan is the matching between schemes and the estimate of the corresponding theoretical uncertainty.

Primary authors: VON DER PAHLEN, Federico (U.Antioquia); HEINEMEYER, Sven (CSIC (Madrid, ES)); SCHAPACHER, Christian

Presenter: VON DER PAHLEN, Federico (U.Antioquia)

Session Classification: Dark Matter