

Two-loop investigation of new physics effects on the W-boson mass from a doublet extension of the SM Higgs sector (30' talk + 15' discussion)

Thursday 20 April 2023 10:15 (45 minutes)

One year ago, the CDF collaboration reported a new precision measurement of the W -boson mass M_W , exhibiting a large deviation from the value predicted by the Standard Model (SM).

In this talk, I will investigate possible new physics contributions to M_W from extended Higgs sectors, focusing as a specific example on the Two-Higgs-Doublet Model (2HDM). Employing predictions for the electroweak precision observables in the 2HDM at the two-loop level and taking into account further theoretical and experimental constraints, I will identify regions of the 2HDM parameter space in which the prediction for M_W is close to the new CDF value. I will additionally discuss the compatibility of these regions with precision measurements of the effective weak mixing angle and the total width of the Z boson, as well as the impact and importance of the two-loop corrections to M_W .

Presenter: BRAATHEN, Johannes (DESY)