



Contribution ID: 21

Type: **not specified**

Vacuum (meta-)stability in the $\mu\nu$ SSM

Monday, 23 August 2021 16:00 (20 minutes)

We perform an analysis of the vacuum stability of the neutral scalar potential of the μ -from- ν Supersymmetric Standard Model ($\mu\nu$ SSM). As an example scenario, we discuss the alignment without decoupling limit of the $\mu\nu$ SSM. We demonstrate that in this limit large parts of the parameter space feature unphysical minima that are deeper than the electroweak minimum. In order to estimate the lifetime of the electroweak vacuum, we calculate the decay rates for the tunneling process into each unphysical minimum. We find that in many cases the resulting lifetime is longer than the age of the universe, such that the considered parameter region is not excluded. On the other hand, we also find parameter regions in which the EW vacuum is short-lived, and we demonstrate how these regions are related to the presence of light right-handed sneutrinos.

Primary authors: WEIGLEIN, Georg Ralf (Deutsches Elektronen-Synchrotron (DE)); BIEKOETTER, Thomas (Deutsches Elektronen-Synchrotron DESY); HEINEMEYER, Sven (CSIC (Madrid, ES))

Presenter: BIEKOETTER, Thomas (Deutsches Elektronen-Synchrotron DESY)

Session Classification: Supersymmetry: Models, Phenomenology and Experimental Results

Track Classification: Supersymmetry: Models, Phenomenology and Experimental Results