Contribution ID: 6

Type: not specified

Phenomenological study of the electroweak vacuum in Beyond Standard Model Scenarios

Monday 4 November 2024 16:00 (45 minutes)

The electroweak vacuum, mainly at zero temperature, is investigated as how the quantum fluctuations affect and constrain different beyond Standard Model (BSM) extensions The quantum fluctuations can lead to a second minimum of the potential, which can be a stable global minimum. The Standard Model falls within the possibility of metastability, which means there can be a deeper minimum. Various beyond-standard model scenarios get bounds from the possibilities of vacuum instability or metastability. It has been seen that the extension of the SM with a scalar in general gives more stability to the vacuum, but the scalar quartic couplings get strong bounds from the perturbative unitarity. Different contributions with non-trivial gauge representation can tamper the behaviour of the SM gauge couplings as well, which are also shown explicitly. The LHC phenomenology in these extended scenarios is also discussed.

Presenter: JANGID, Shilpa