

Status of the Aligned two Higgs doublet model in the low mass region

Saturday, 20 July 2024 14:30 (17 minutes)

Two Higgs doublet model (2HDM) is very a simple extension of the Standard Model (SM). It provides interesting phenomenology concerning several unsolved issues of the SM. To remove the undesirable flavour changing neutral currents (FCNCs), 2HDM is usually described with an additional Z_2 -symmetry. But, one can circumvent the issue of FCNCs by assuming similar Yukawa structure for the two scalar doublets too. The model with this intriguing feature is termed as aligned two Higgs doublet model (A2HDM). The constraints on A2HDM are much weaker than the 2HDM cases. A2HDM also provides a generic framework to study different varieties of 2HDMs together. Here, we illustrate a global fit of A2HDM using the package HEPfit. We study the possibility of having new particles lighter than the SM Higgs. We perform a bayesian analysis including stability and perturbativity bounds, flavour and electroweak precision observables, and scalar (and pseudoscalar) searches at LEP and LHC for this global fit.

Alternate track

1. Beyond the Standard Model

I read the instructions above

Yes

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Session Classification: Higgs Physics

Track Classification: 01. Higgs Physics