Contribution ID: **17** Type: **Talk**

Probing EWPT in 2HDM with LHC and Future Lepton Colliders

Sunday, 4 June 2023 10:55 (25 minutes)

tudying the properties of Standard Model (SM) –like Higgs boson becomes one important window to explore the physics beyond the SM. In our works, we present studies about the implications of the Higgs and Z-pole precision measurements at current LHC and future Higgs Factories. We perform a global fit to various Higgs search channels to obtain the 95% C.L. constraints on the model parameter spaces of Two Higgs Double Model (2HDM). In the 2HDM, we analyse tree level effects as well as one-loop contributions from the heavy Higgs bosons. The strong constraints on $\cos(\beta - \alpha)$, $m\Phi$ and heavy Higgs mass splitting can be complementary to direct search of the LHC and Z pole precision measurements. Our works also scrutinize the relationship between SFOPT required by baryogenesis and SM-Higgs coupling deviation at LHC and future lepton colliders.

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Session Classification: Collider