

Testing the EWPT of 2HDM at future lepton Colliders

Thursday 5 December 2019 15:30 (20 minutes)

A successful electro-weak baryogenesis calls for a strong first order electro-weak phase transition (SFOEWPT), which is unavailable in the Standard Model (SM). Some degree of modification on Higgs potential at electro-weak temperature is required to develop an energy barrier, and the property of Higgs at zero temperature is also changed accordingly. In this work we study the realization of SFOEWPT in type-I and type-II two Higgs doublet model (2HDM), and changes of Higgs couplings in SFOEWPT satisfied parameter regions. A global fit to various search channels at future electron colliders is performed to obtain the 95% C.L. limits on parameter space. Our results shows that future electron colliders are capable of excluding most SFOEWPT parameter region in type-I and type-II 2HDM.

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Session Classification: Parallel

Track Classification: Particle physics