Contribution ID: **1167** Type: **Parallel session talk**

Analysis of interference effects in the di-top final state for CP-mixed scalars in extended Higgs sectors

Friday 19 July 2024 15:04 (17 minutes)

Various extensions of the Standard Model predict the existence of additional Higgs bosons. If these additional Higgs bosons are sufficiently heavy, an important search channel is the di-top final state. In this channel, interference effects between the signal and the corresponding QCD background process are important. If more than one heavy scalar is present, besides the signal-background interference effects associated with each Higgs boson also important signal-signal interference effects are possible. We perform a model-independent analysis of various interference contributions within a simplified model framework considering two heavy scalars that can mix with each other, taking into account large resonance-type effects arising from loop-level mixing between the scalars. The interference effects are studied with Monte Carlo simulations for the di-top production at the LHC. We demonstrate that signatures can emerge from these searches that may be unexpected or difficult to interpret.

Alternate track

1. Higgs Physics

I read the instructions above

Yes

Primary authors: BAHL, Henning; KUMAR, Romal; WEIGLEIN, Georg Ralf (Deutsches Elektronen-Synchrotron (DE))

Presenter: WEIGLEIN, Georg Ralf (Deutsches Elektronen-Synchrotron (DE))

Session Classification: Higgs Physics

Track Classification: 01. Higgs Physics