



Contribution ID: 818

Type: Parallel talk

Disentangling Higgs and Electroweak Physics at Future Lepton Colliders

Thursday, July 11, 2019 12:30 PM (15 minutes)

With Higgs couplings measurement prospects reaching the per-mille level at future lepton colliders, their interplay with the electroweak sector is expected to become relevant. We perform the first comprehensive Standard Model Effective Field Theory analysis covering jointly the Higgs and electroweak sectors. It allows us to investigate the impact of electroweak parameter uncertainties in Higgs couplings determination; to examine what electroweak measurements are needed to achieve the full potential of the precision Higgs physics program at future lepton colliders; and conversely to discuss the possible improvement to measurements electroweak parameters otherwise brought by Higgs measurements. For this we systematically compare reaches for circular and linear colliders with several proposed energies and polarization configurations.

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Session Classification: Higgs Physics

Track Classification: Higgs Physics