

Phenomenology 2019 Symposium



Contribution ID: 671

Type: parallel talk

Probing the Higgs Yukawa coupling to the top quark at the LHC via single top+Higgs production

Monday 6 May 2019 15:30 (15 minutes)

The conjoined production at the LHC of single top and Higgs boson via t-channel weak boson exchange is ideal to probe the top-quark Yukawa coupling, due to a delicate cancellation between the amplitudes with the htt and the hWW couplings. We find that the top quark is produced with 100% polarization in the leading order, and its quantum state is determined by the spin-vector direction in the t-quark rest frame. We relate the spin direction to the four-momenta of the top, Higgs and a jet in the helicity amplitude framework. We identify a polarization asymmetry that is sensitive to CP violation, even after partial integration over the forward jet momentum. This CP violating asymmetry may be observed at the LHC via the component of the top-quark polarization that is perpendicular to the th scattering plane.

Summary

Authors: Prof. HAGIWARA, Kaoru; Prof. BARGER, Vernon; ZHENG, Ya-Juan

Presenter: ZHENG, Ya-Juan

Session Classification: Higgs I