Contribution ID: **193** Type: **not specified**

CP properties of the Higgs boson via ttbar Higgs

Friday, 1 June 2007 09:50 (25 minutes)

We analyse the associated production of the Higgs boson with a top quar pair, $e^-e^+ \to t\bar{t}\Phi$, in the most general case where the coupling is a mixture of scalar and pseudoscalar components, $g_{\Phi t\bar{t}} \propto (a + ib\gamma_5)$. We have calculated the individual helicity amplitudes for the process and obtained the corresponding cross sections for each helicity state; we have also constructed the top quark polarization asymmetries with polarized and unpolarized initial $e^{\pm}$ beams. The sensitivity of the pseudoscalar component of the coupling b to the cross section and polarization asymmetry has been investigated. We find that although neither of these observables is very sensitive to the parameter b except for values close to unity, both can clearly distinguish a purely CP–even Higgs state from a purely CP–odd state. Finally, we have constructed an up–down asymmetry for the produced top quark which allows to probe the CP mixing of the Higgs state Φ.

Primary author: Prof. GODBOLE, Rohini (IISC Bangalore)

Presenter: Prof. GODBOLE, Rohini (IISC Bangalore)

Session Classification: LCWS: Top/ QCD