Contribution ID: **4** Type: **not specified**

Probing charged Higgs bosons using Top quark polarisation

Wednesday 4 December 2019 16:00 (30 minutes)

We study the production and the decay of a heavy charged Higgs boson at the Large Hadron Collider (LHC) in gb fusion. The chiral structure of the $H^+\bar{t}b$ coupling can trigger a particular spin state of the top quark produced in the decay of a Charged Higgs boson and therefore, is sensitive to the underlying mechanism of the electroweak symmetry breaking (EWSB). Taking two benchmark models (2HDM type-I and 2HDM type-Y) as an example, we show that observables sensitive to the top quark polarisation – constructed of energies and angles of the top quark's decay products – can be used both as a discovery as well as a characterization tool. We discuss the resilience of these observables to the flavor scheme used in the calculations, and to the NLO QCD corrections.

Presenter: JUEID, Adil (Konkuk University)

Session Classification: Afternoon session II