HEP 2013
Stockholm
18-24 July 2013

Contribution ID: **616** Type: **Talk presentation**

Probing for the t->ch decay at the LHC

Friday, 19 July 2013 16:15 (15 minutes)

The Higgs boson h and the top quark t are the two most massive and newest particles ever discovered. If $t \to ch$ occurs at a couple of percent level, the observed ZZ^* and $\gamma\gamma$ signal events for the Higgs boson may have accompanying cbW activity coming from $t\bar{t}$ feeddown. A general two Higgs doublet model brings in new ct, cc and tt couplings that modify properties of the light Higgs h, and $t \to ch$ can be searched for via $h \to ZZ^*$, $\gamma\gamma$, WW^* and $b\bar{b}$ (even $\tau^+\tau^-$) modes in $t\bar{t}$ events. We show that existing data should be able to push $calB(t \to ch)$ down to below the percent level.

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Session Classification: Top and Electroweak Physics

Track Classification: Top and Electroweak Physics