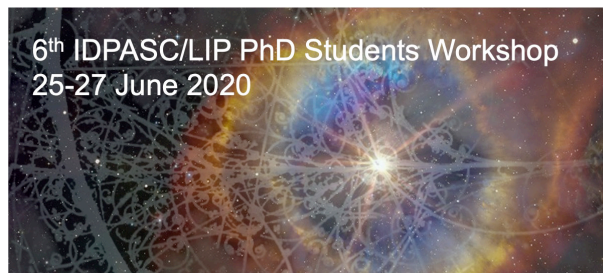


## 6th IDPASC/LIP PhD Students Workshop



Contribution ID: 39

Type: **PhD student talk**

# Search for new interactions on the top quark sector

*Thursday, 25 June 2020 12:00 (12 minutes)*

The study of the top quark properties provides not only an important test of the Standard Model (SM) of particle physics but also an excellent way of probing physics beyond it. In the SM the top quark decays via Flavour Changing Neutral Currents (FCNC) have extremely small branching ratios but some extensions predict a significant enhancement of the probability for such decays. The PhD thesis is devoted to the study of the FCNC processes through the single top quark production with a Z boson using data collected by the ATLAS detector which is a highly sensitive process to probe the Flavour Changing Neutral (FCN) coupling  $tqZ$  (with  $q$  being an up or charm quark). Furthermore, the combination with the results from the  $t \rightarrow qZ$  decay are foreseen. The performed phenomenological study of the interference between  $tZq$  (FCNC in top decays) and  $tZ$  (production via FCNC) will also be presented. The phenomenological study of rare top decays with a new scalar  $S$  particle will be part of the presentation as well.

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**Session Classification:** Session 2