



Πανεπιστήμιο
Κύπρου

ΤΜΗΜΑ ΦΥΣΙΚΗΣ

Το Τμήμα Φυσικής του Πανεπιστημίου Κύπρου
σας προσκαλεί την

Τρίτη, 7 Μαΐου 2019, ώρα 12:00
στην αίθουσα B228, στο κτίριο 13 στην Πανεπιστημιούπολη

στην παρουσίαση της Διδακτορικής Διατριβής του Ather Mohsan Waseem

“Search for charged Higgs boson produced in $pp \rightarrow H^\pm(b)t$ process in the fully hadronic final state using 13 TeV LHC data”.

The search of the charged Higgs boson H^\pm is an important topic in experimental particle physics as an indication of its existence will provide irrefutable proof of physics Beyond the Standard Model (BSM). The most prominent decay mode for the heavy charged Higgs in the mass range $m_{H^\pm} = [200,3000]$ GeV/c² is $H^\pm \rightarrow tb$. This analysis is the first-ever study of the $H^\pm \rightarrow tb$ channel in the fully hadronic final state. The LHC RunII data collected in the year 2016 corresponding to an integrated luminosity $L = 35.9$ fb⁻¹ was used for the search. No deviations from the Standard Model predictions were observed and a 95% CLs upper limit was extracted for $\sigma_{pp \rightarrow H^\pm(b)t} B(H^\pm \rightarrow tb)$. The observed limit ranges from 30.5 pb for $m_{H^\pm} = 200$ GeV/c² to 0.3 pb for $m_{H^\pm} = 3000$ GeV/c².