Abstract Submitted
for the 4CF15 Meeting of
The American Physical Society

Light Charged Higgs Bosons in Two Higgs Doublet Models
ADARSH PYARELAL, University of Arizona — The Two Higgs Doublet Model (2HDM) is one of the simplest extensions to the Standard Model Higgs sector, and predicts the existence of additional Higgs bosons, including a pair of charged Higgs bosons $H^{\pm}$ and a pseudoscalar Higgs boson A. Existing searches for the charged Higgs mostly focus on the $H^{\pm} \to \tau\nu/cs$ decay channels. For light As, $H^{\pm} \to AW$ becomes kinematically accessible and competitive with the conventional channels. We examine the single top production channel with $t \to bH^{\pm}$, and the subsequent decay chain of $H^{\pm} \to AW \to \tau\tau l\nu$. We perform a collider analysis and obtain exclusion and discovery reach at the 14 TeV LHC with 100 fb-1 integrated luminosity. We further study the implication of the search limits on the Type II 2HDM.

Adarsh Pyarelal
University of Arizona

Date submitted: 08 Sep 2015 Electronic form version 1.4