W': A hypothesized vector boson of charge ±1

Jet from top quark?

Jet from b quark?

Maximal signal sensitivity at SR

=> Hunt for excess of events here

Jet Variable | SR
---|---
t | $m_{SD}$ ∈ [105, 210] GeV
b | $m_{SD}$ ∈ [105, 210] GeV

Jet Variable | SR'
---|---
t | $m_{SD}$ ∈ [105, 210] GeV
b | $m_{SD}$ ∈ [105, 210] GeV

Multijet Background

B tagging Pass-to-fail ratio

Data - other bkgs (SR')

Jet VR

t | $m_{SD}$ ∈ [105, 210] GeV
b | Pass

Interference with single top quark production in SM

→ Events populate at low energy

No excess observed!

Set limits

Observed (expected) exclusion limits on W' mass (assuming SM-like couplings):
3.4 TeV (3.7 and 3.6 TeV) both for right- and left-handed W'

Contact: suman.chatterjee@cern.ch

Document:
arXiv:2104.04831
(submitted to PLB)

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