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An introduction to search for vector boson scattering production of same sign W boson decaying to muons with pp collisions at sqrt(s) = 13.6 TeV collected by the CMS experiment

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In this presentation I will give an introduction to vector boson scattering processes at LHC. I aimed scattering two same sign W bosons leading to two same sign muons in association with two jets. To identify the muons among many other muons coming from other processes in the CMS experiment, we define a signal region with requiring two jets with large pseudorapidity separation and high invariant mass. Moreover, we first are required to identify all backgrounds contributing in our aimed analysis, then we measure their contribution in signal region so that we can measure signal events by subtraction all backgrounds from observed events in the signal region. There are two kinds of background in my analysis, one of which is non-prompt background. Non-prompt backgrounds are measured directly from data by a so-called data-driven method. Other backgrounds can be estimated with MC simulation.

Presenter(s) :   MOUSAVI, Mohammad