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Discrimination between QCD and EW signal in same sign W production in VBF

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Abstract:

1 Introduction all

With the second run of LHC in progress, the main goal the community have is to better measure, and describe, the features characterising the so much Standard-Model look alike Higgs boson. In order to achieve this goal, we need to increase our power to discriminate between what we define as the *signal* and what then is the *background*, the former being the part of sample which has the features we would like to measure while the latter is usually something we would like to get rid of. Amongst the various production mechanisms, the Vector-Boson-Scattering(-Fusion) or simply VBF, provides not only one of the largest production rates but also a very clean signature from the QCD background.

There are various phenomenological reasons to further increase the sensitivity to such processes. Firstly, even if about the 8% of the gluon-fusion cross section, it is expected that the total cross section for VBF will increase by a factor of ~ 3.3 (with its backgrounds also growing). Secondly diagrams that involve a high mass Higgs in the VBF processes give access to the longitudinal modes of the produced vector bosons.

2 Generalities on VBF Giulia

3 Event Generation Davide

4 Discrimination of Variables Zahari and Yacine

5 Conclusions (all)

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References

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