Higgs pair production in the four b quarks final state

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Abstract

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Keywords: Keyword1, Keyword2, Keyword3, Keyword4, Keyword5

Introduction

- Higgs pair production as a benchmark physics process for HL and future colliders (discovery inaccessible at the LHC)
- Boosted analysis shows better sensitivity because QCD background can be kept under control
- When using boosted jets we need to resolve their substructure (jet substructure observables)
- The granularity of the (hadronic) calorimeter is a key parameter that determines how well we can resolve the substructure
- The final state with four b quarks benefits from the largest BR and is a source of fully hadronic boosted Higgs jets
- Goals of the work: estimate analysis sensitivity to Higgs trilinear coupling and study the influence of the HCAL granularity in the analysis

Background

- HL upgrades for the LHC
- FCC-hh, 100 TeV hadronic collider at the stage of CDR
- Feasibility studies/previous work on this channel (slightly longer literature review)

Implementation/Analysis

- Granularity benchmark configurations
- Signal and backgrounds
- Boosted category
- Experimental signature
- Optimization
- Event selection

Results

- Cutflow table
- ...

Conclusions

Conclusions, future work and some final remarks...

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References