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VBF STXS BINNING PRELIMINARY STUDIES FROM CMS

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On behalf of CMS collaboration

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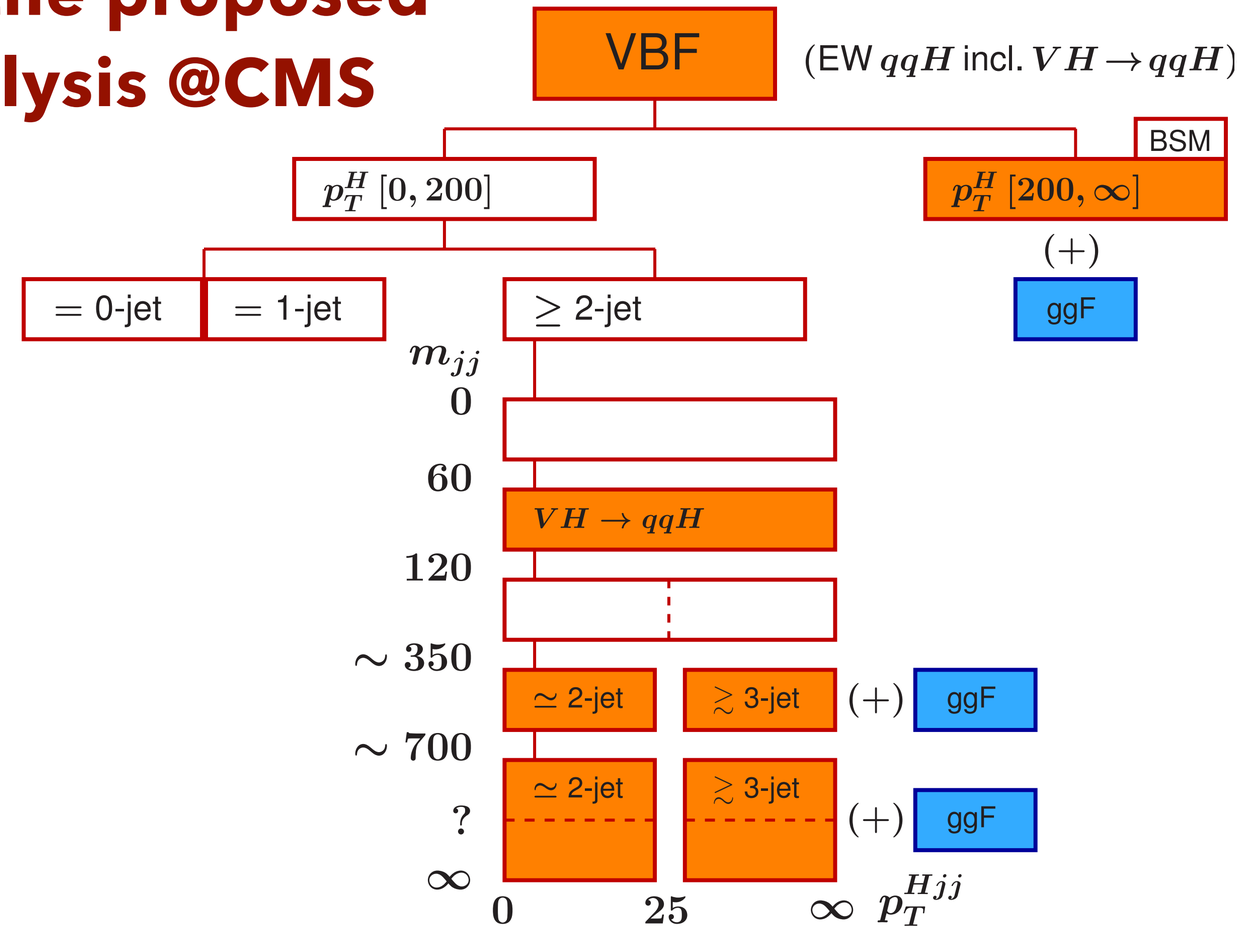
INTRODUCTION

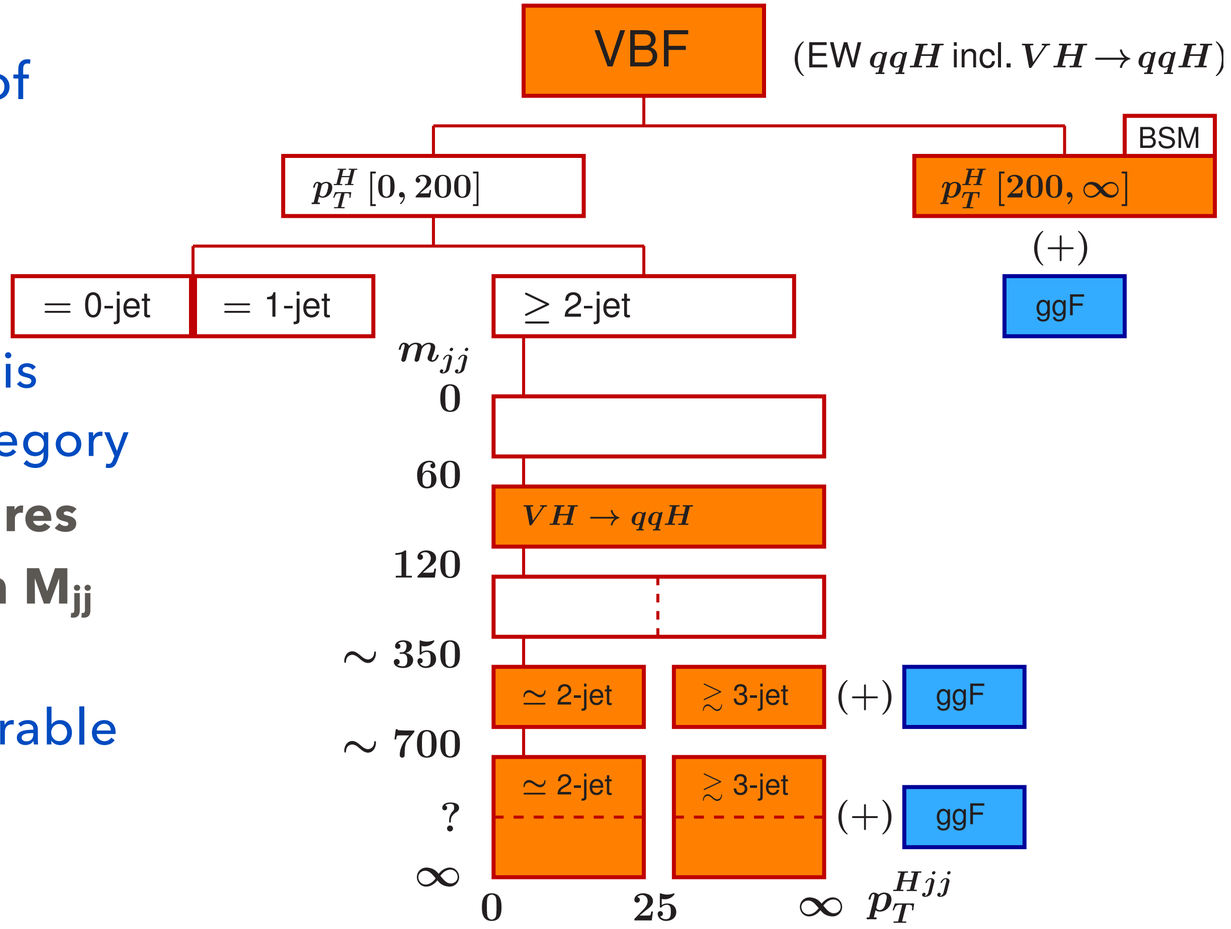
- **Preliminary internal investigation of the proposed stage 1.1 was done by few Higgs analysis @CMS**



- The option with the Mjj binning of [..., 350, 700, 1500, ∞] is explored

STATUS AND CONCLUSIONS FROM CMS VBF-STAGE-1.1

- **Changes investigated by CMS H4l and Hgg analyses**
  - **Change BSM bin from P_T^{j1} to P_T^H**
    - Most of the events end up in the high Pt region of ggH Stage-1
  - **Split 0,1-jet category**
    - 0-Jet is unlikely to be measurable
    - Measurement of 1-jet bin is possible in HZZ analysis with sufficient luminosity and dedicated RECO category
  - **Some decay modes require high Mjj, i.e Hττ requires M_{jj}>800 GeV. This is in favour in having high truth M_{jj} boundaries**
    - Mjj binning of [..., 350, 700, 1500, ∞] GeV is favourable
    - Already investigated by Hzz and Hgg analyses
  - **No sensitivity for 0-1 Jet and M_{jj}[0, 60]**
    - Possible merging is considered for these bins



SUMMARY

- **CMS has done internal studies on the impact of the stage 1.1 in H4l and diphoton channels**
  - Mjj binning of [..., 350, 700, 1500, ∞] GeV is favourable
    - Already implemented by some CMS Higgs analyses
    - More inline with some Higgs VBF analyses cut definitions
  - No sensitivity for 0-1 Jet and M_{jj}[0, 60]
    - They will have to be constrained in the fits to SM predictions or to other bins