H->γγ Studies

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IHEP Weekly Meeting

Run2 preparation

- Derivation framework
  - handles the slimming/thinning of the data/MC: xAOD -> DxAOD

- AnalysisFramework
  - xAOD code to apply calibration/systematics/base-selection/reconstruction of final observables: DxAOD → MxAOD (or n-tuple?)
  - later: macros for end-analysis/plot making (e.g. $m\gamma\gamma$ PDF construction etc)

- 13 TeV samples are available for test
  - full simulation for both signals and backgrounds
  - Powheg+pythia for ggF and VBF
  - Pythia for VH, ttH
  - Sherpa and MG5 for γγ, γj, jj, fullsim/AF2/AF2F/mixed

Run2 Analysis

- Be involved in Run2 preparation
- Continue VBF analysis
- Continue H->$\gamma\gamma$ coupling/mass analysis

VBF for HL-LHC

- Analyses will first base on truth ntuples + Smearing Functions
  - moving to full simulation if possible

- two important publication:
  - Large Eta Task Force report
    - studying upgrade possibilities of the impact of:
      - extended eta tracking coverage (up to $|\eta|=4$) for upgrade.
      - muon instrumentation beyond $|\eta|=2.7$
    - **February 20th** complete draft with prelim numbers
    - **March 20th** final TF meeting to approve the document -> distribution
  - Scoping document
    - test different detector layout
    - end of April ... 1st draft circulation

Contribution in HP

the roadmap

TOPIC	Large Eta Task Force	Scoping Document	Benchmark in full simulation	Groups/People
VBF H→ZZ→4l	YES	YES	-	See group A
VBF H→ττ	YES	YES	-	Alex Tuna
H→μμ (+VBF?)	possibly	YES	YES	Paris VI
HH→bbbb (+VBF)	possibly	YES	YES	UCL
VBF H→γγ	YES	YES	-	See group B
HH→bbγγ	possibly	YES	-	See group C
H→ZZ→4l res. studies	YES	?	-	S.Rosati + M.Wielers

A
1. Carleton University
2. New York University
3. Hong Kong University of Science and Technology

B
1. Huijun Zhange
2. Jin Wang

C
1. Wei Ming Yao
2. Marc Escalier
3. Nick Styles ?
4. Magdalena Slawinska + Wouter van den Wollenberg ?

● all mentioned analyses are either ready or will be in ~month (LETF)

7

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