

# HSG5 Status

## Internal Note

- Note started, but only skeleton:  
[ATL-COM-2012-416](#)
- Serious resistance from the group last week
- Personally my main problem was the timescale
- Strongest point raised was that it prevents us from exploring the potential in the analyses
- To do for WH/ZH:
  - Fits to the signal and backgrounds in the limit setting
  - New jet calibration
  - New b-tagging corrections (top SFs in ~1 month)
  - Further suppression of top background
  - Improving the theory description of the data and systematics
  - etc
- But... we are dominated by systematics!
  - Big effect from higher pileup expected:
  - Forward jet veto and exclusive jet categories
  - Likely to need changes to jet selection
  - B-tagging working point may need to change
  - We won't have until sometime in May
  - Need to explore new discriminating variables
- Other analyses: hope to have ttH and boosted H->bb
  - Not well defined yet; need to concentrate on 2011 data before going to the more complicated conditions in 2012

## Paper/note circulation:

- Reading of draft 1 on 24<sup>th</sup> April:
  - Talks by Giacinto and Pippa
- Inputs for combination: separated WH/ZH for vvbb next day or two
- Need to complete description of statistical treatment in support material

## Other channels:

- Walking technicolor analysis could be done quickly from ZH analysis and H->ZZ->llqq
  - Nice results shown last week:  
<https://indico.cern.ch/conferenceDisplay.py?confId=187283>
- Boosted H->bb ?
  - Pushing to get this going faster...
  - Starting weekly working meetings
  - CMS will have analysis for ICHEP
  - Boosted Z->bb too far away – MC description very difficult (Py vs Hwg, LO vs NLO, etc)
    - But trigger for 2012 ok for now
- ttH working for 2011 analysis in mid May
  - Starting weekly working meetings
  - In parallel to vector-like quarks
  - Should request E.Board soon:
    - N.Wermes, V.Martin, T.Golling, M.Corradi for existing VLQ ed.board
- WZ->lvbb: use as a calibration for H->bb mass peak
  - Proposed by CERN group for ICHEP

# BACKUP: HSG5 Status Last Week

## Paper/note circulation:

- Reading of draft 1 on 24<sup>th</sup> April
  - Presentation by Giacinto
- Inputs for combination ready
- Need to complete description of statistical treatment in support material

## Internal Note

- Note started, but only skeleton:
  - [ATL-COM-2012-416](#)
- ttH working for 2011 analysis in mid May
  - In parallel to vector-like quarks
  - Request E.Board? N.Wermes, V.Martin, T.Golling, M.Corradi for existing VLQ ed.board
- Boosted H->bb ?
  - Pushing to get this going faster...
  - CMS will have analysis for ICHEP
  - Boosted Z->bb too far away – MC description very difficult (Py vs Hwg, LO vs NLO, etc)
    - But trigger for 2012 ok for now
- Walking technicolor analysis could be done quickly from ZH analysis
  - But may be better in H->ZZ->llqq

## 2012 MC:

- ... ongoing ...
- Backgrounds need Z->vv
- Dibosons seem to small (and need Z->vv)
- Will try to move as much as possible to AFII
- But boosted analysis may suffer from this

## CP involvement

- Trigger – several points of contact:
  - vvbb: Yoshikazu Nagai (CPPM) and Kenji Kiuchi (Tsukuba)
  - Boosted Z->bb: Luke Lambourne (UCL)
  - VBF: Eric Ouellette
- Jets:
  - Major systematic uncertainty
  - Need to:
    - Move to new JES
    - Use b-jet semileptonic correction
  - b-JES?... presentation by D.L.Mateos in HSG5
  - Possible involvement in work on b-jet resolution
- B-tagging:
  - Major systematic uncertainty:
  - Improvement expected from top b-tagging analysis – unknown timescale
  - Possible involvement through new method using tt (C.Schiavi)