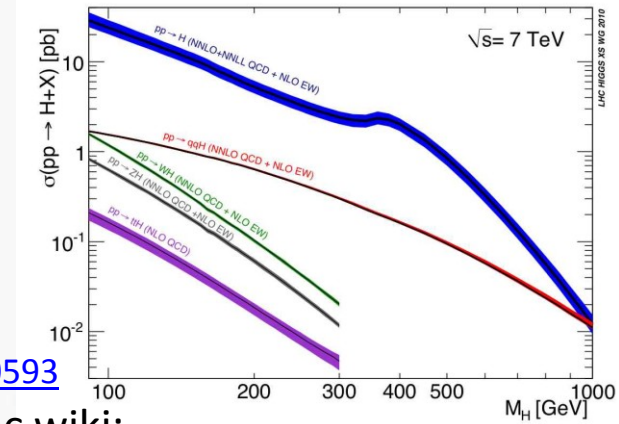# H->bb Weekly Meeting

Ricardo Gonçalo (RHUL)

HSG5 H->bb Weekly Meeting, 8 February 2011

News! News! News!

- Busy Physics & Performance week last week
  - See M.Aleksa's talk in Weekly meeting for details of Chamonix decisions: http://indico.cern.ch/conferenceDisplay.py?confId=119623
  - See D.Costanzo's talk in physics plenary for status of MC vs data comparisons: http://indico.cern.ch/conferenceDisplay.py?confId=121506
  - B-tagging meeting last week: http://indico.cern.ch/conferenceDisplay.py?confId=124967
  - Trigger/Physics discussion of menu for 2011: http://indico.cern.ch/conferenceDisplay.py?confId=125322
  - Higgs WG meeting: http://indico.cern.ch/conferenceDisplay.py?confId=119789

- Other:
  - HSG5 Workshop in Dubna
    - Final dates: 17th – 19th May 2011
    - Visas have to be thought about soon! Expect email with instructions for registration etc
    - **Will be the last check point for Summer CONF notes before approval process – aim to have solid results**
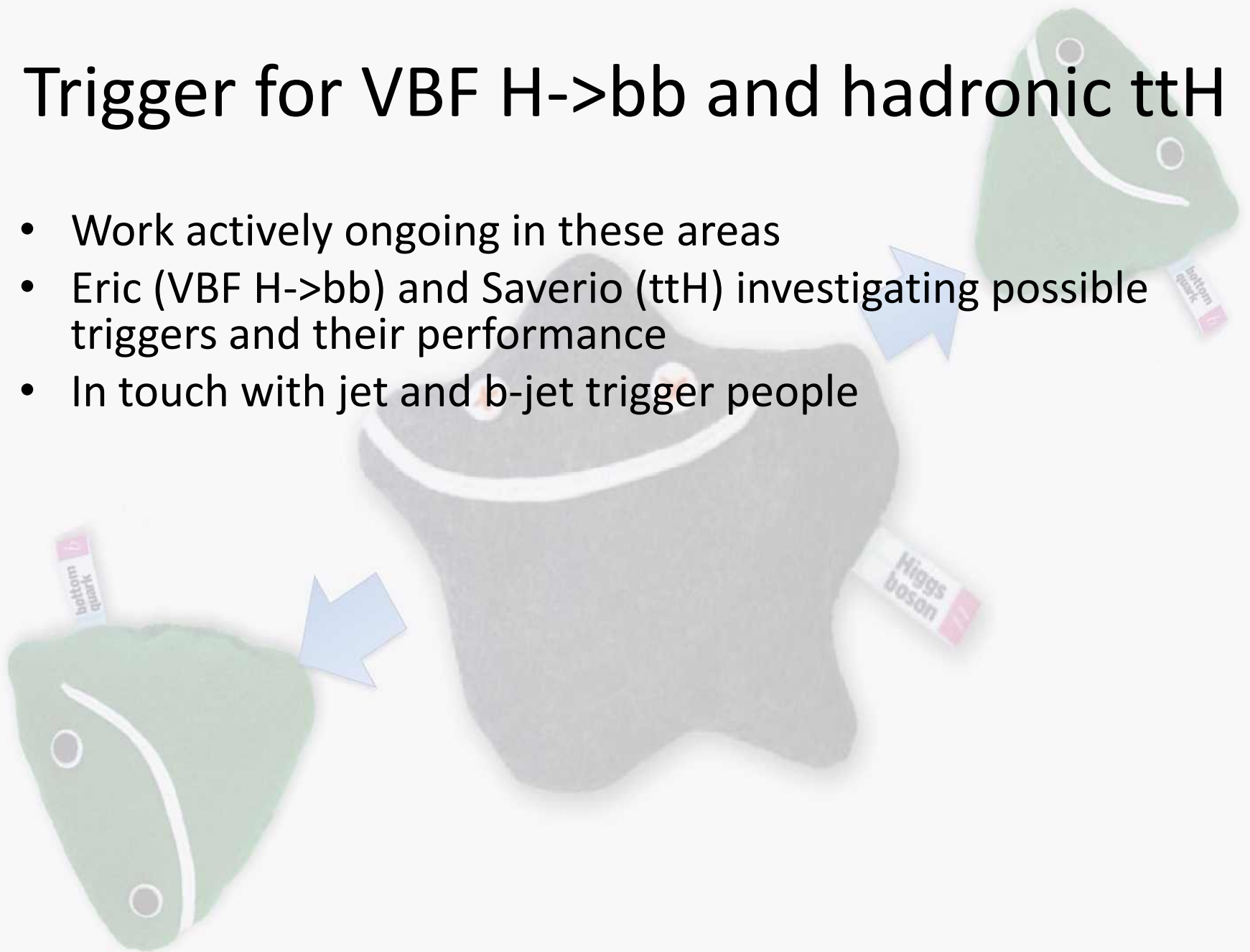
LHC Higgs Cross Section Working Group

- LHC Higgs Cross Section Group:
  https://twiki.cern.ch/twiki/bin/view/LHCPhysics/CrossSections
- **Yellow report** with inclusive cross sections:
  - **Yellow report recently** released: http://arxiv.org/abs/1101.0593
  - Higgs WG requested to use numbers from the LHC xsec wiki:
    https://twiki.cern.ch/twiki/bin/view/LHCPhysics/CERNYellowReportPageAt7TeV
- Second phase of work starting now: **exclusive Higgs observables**
  - Higgs Signal: cross sections with cuts, differential K-factors, effect of jet-veto or b-tag jet on differential K-factors, comparison between NLO MC and NNLO codes
  - SM Backgrounds: define control regions, estimate theoretical errors, use the most advanced NLO MC (POWHEG, MC@NLO, new Sherpa), signal/background interference
  - Theory Uncertainties: for exclusive observables, for both SM and MSSM Higgs, QCD scale and PDF error correlations among different Higgs production channels and among
- First results expected for BNL workshop in May; plan for 2 publications this year
- **H→bb meeting** on 17 February 2011:
  - Survey of the codes (for both VH→Vbb and ttH), loose (i.e. non-boosted) VH analysis
  - Will start with validation on Wbb calculations
  - **Volunteers welcome!**

Trigger for VBF H->bb and hadronic ttH

- Work actively ongoing in these areas
- Eric (VBF H->bb) and Saverio (ttH) investigating possible triggers and their performance
- In touch with jet and b-jet trigger people

B-tagging meeting

- Removal of PU events that have been re-used too often:
  - Ntuple based: macro at:
    https://twiki.cern.ch/twiki/bin/view/AtlasProtected/Analysis162
- Missing truth label for PU jets (especially relevant for 'soft' events, e.g. QCD J0):
  - MinBias PU interaction may be harder than 'main interaction' and drive signal primary vertex determination (sum pt2)
  - Relevant when computing MC truth mistag rate in these samples
- Tracking group proposes to raise track reconstruction pt threshold from 100 MEV to 400 MeV.
  - B-Tagging validation didn't show significant effects:
    http://indico.cern.ch/conferenceDisplay.py?confId=124040

From last week…

- Wisconsin: larger data samples for WH NN/BDT training:
  - Lashkar looked at effect of lepton filter on WH->lnubb
  - Lepton cuts of $p_T > 15$ GeV and $|\eta| < 2.8$ give filter efficiency of 68%
  - New proposal is 100k events with the filter at each of m_H = 115, 120 and 130 GeV
  - EVGEN job options would be modification of sample 105872: W->ev and W->μν, but **NO W->τν**
  - **CAVEAT**: error on the simulation is large, so training an MVA to use details of the kinematics could be BAD. Will need detailed comparisons of data and MC
  - More thoughts?

- LMU: SVN area for code
  - Created today (sorry for the delay)
  - atlasoff/PhysicsAnalysis/HiggsPhys/HSG5/Hbb/LMU_H2bbAnalysis
  - Will do the same for Lisbon analysis code

Any Other Business?