Top Physics Plans at LHCb

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on behalf of the LHCb collaboration

WG1 Meeting

Wednesday, 28th February 2018

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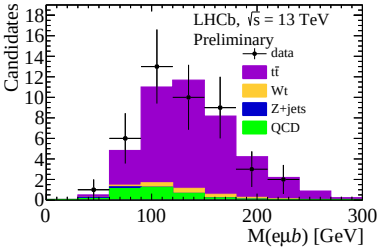
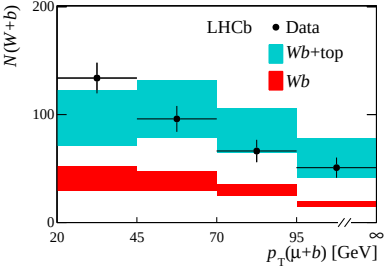
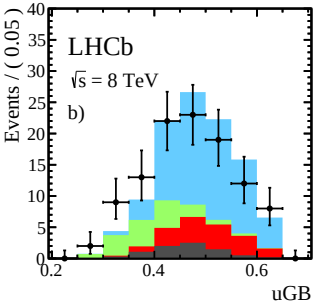
introduction and motivation







- three measurements of top production at LHCb so far, partial reconstruction of final states
- complements differential distributions from ATLAS/CMS, constrains gluon PDFs at high-x, and gives access to region with higher asymmetry
- studies will aim to project statistical and systematic precision of cross-section and asymmetry with 300 fb^{-1} at the HL-LHC

plans for measurements

- plan to focus on two final states
  - ℓb - highest statistics, lowest purity
  - $\mu e b$ - highest purity, lowest statistics
- also possible that some other final states could contribute, e.g. $\ell b b$
- currently, a particle level study is foreseen, with reasonable estimates of the detector performance regarding efficiencies, resolution etc...
- will use this to establish the statistical precision with which we can determine the cross-section and asymmetry in the different final states
- the generation of background processes will also be important, particularly to make a precise measurement of the top asymmetry
  - can we benefit from in-situ constraints (e.g asymmetry in $W + j$ events), or improved PDF sets

some questions?

- should our studies be performed with a "common" generator, set of PDFs, configuration etc..?
- LHCb has excellent B and D hadron reconstruction capabilities, $c-$tagging and the potential to do strange tagging
  - is there anything else we can contribute on?, e.g. FCNC, V_{ts}, top mass?
  - may be worth some "back of the envelope" exploratory studies

backup