

Pythia 6 $b\bar{b}$ production tests

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(Upon request from LHCb)

Observables:

- $b\bar{b}$ production cross section at LHC
- fraction of B_d in $b\bar{b}$ events
- fraction of B_u in $b\bar{b}$ events
- fraction of B_s in $b\bar{b}$ events
- fraction of b-baryons in b-bbar events
- average multiplicity for stable charged particles in minimum bias events
- average multiplicity for stable charged particles in $b\bar{b}$ events

Cross sections of:

- $f + f' \rightarrow f + f'$ (QCD)
- $f + \bar{f} \rightarrow f' + \bar{f}'$, $g + g$
- $f + \bar{f} \rightarrow g + g$
- $f + g \rightarrow f + g$
- $g + g \rightarrow f + \bar{f}$, $g + g$
- $g + g \rightarrow J/\psi + g$, $\chi_{0,1,2c} + g$, $J/\psi + \gamma$
- Elastic scattering
- Single diffractive (XB,AX)
- Single diffractive (AX)
- Double diffractive
- Low- p_T scattering

[http://lcgapp.cern.ch/project/simu/generator/](http://lcgapp.cern.ch/project/simu/generator/....)
[/test_individual_generators/validation/pythia6_lhcb/ :](http://lcgapp.cern.ch/project/simu/generator/....)

- Any two combinations “Pythia 6 version + platform” can be compared
- p_T and η distributions for the pair are superimposed on a single plot
- single observables are compared in a plain table