

SM channels for muon system study

2 channels I want to mention:

- $b \rightarrow \mu X$
 - Signal, not background.
 - Fraction ratio $\sim 10\%$
 - We extract it from inclusive samples? Probably supplied for other WGs: inclusive $H \rightarrow bb$, $Z(\gamma) \rightarrow bb, \dots$
- $yy \rightarrow$ hadrons, with very low GEANT thresholds for thermal neutron flux study
 - Starting from an analysis done in LHCb

Framework description

- A new study of the low energy background has been done with the actual detector geometry and in the Gauss (v24r6) framework
 - Thresholds very low in production (EM processes)
 - Electron/positron: 5 mm -> 0.5 mm (in range)
 - photon: 10 mm -> 0.5 mm
 - Thresholds very low in tracking (PL: QGSP_BERT_HP)
 - electrons/positrons: 1 MeV -> 30 keV
 - photons: 1 MeV -> 30 keV
 - hadrons: 10 MeV -> 0.1 MeV
 - neutrons: 10 MeV -> 0 MeV
 - Geometry updated introducing the cavern and materials beyond the MF4 (magnet and concrete wall)
- ~45000 events have been generated to produce parameterizations (~6 min/event @1GHz Xeon)