Requirements for $B_s \rightarrow \mu\mu$ measurement

- huge b production in acceptance
- high trigger efficiency in muon channel
- good mass resolution in search window
- background rejection: μ-k and μ-π separation
- analysis...

LHCb - some numbers ...

#b to measure:

acceptance : $1.9 < \eta < 4.9$

$\sigma_{bb} \sim 230\ \mu b$ in acc.

at nominal Luminosity ($L \sim 2 \times 10^{32}\ cm^{-2}s^{-1}$):

~ 40 kHz of b in acceptance

Trigger efficiency:

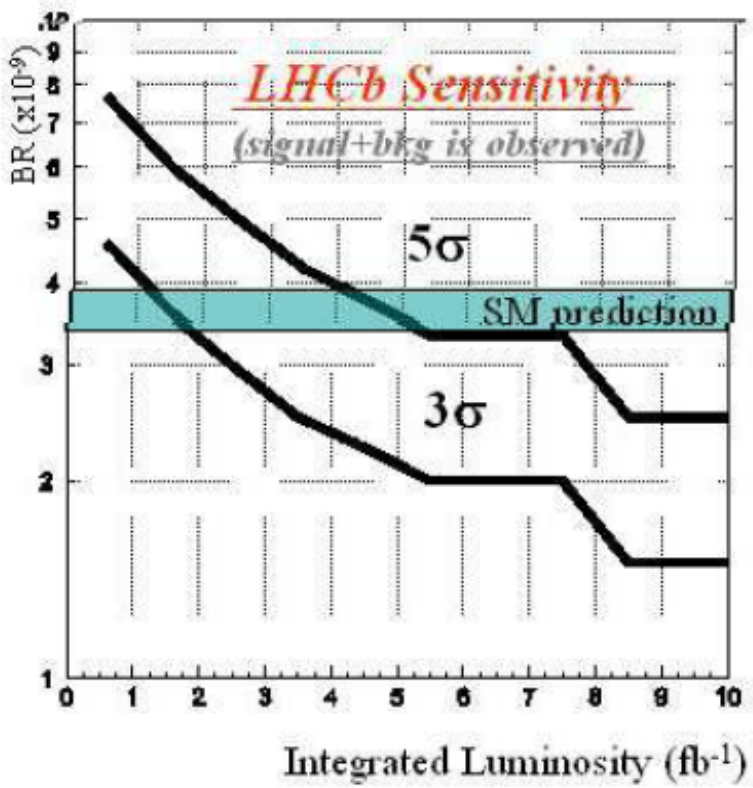
L0 (hardware) : ~ 97 %

HLT (software) : ~ 90 % (dimuon)

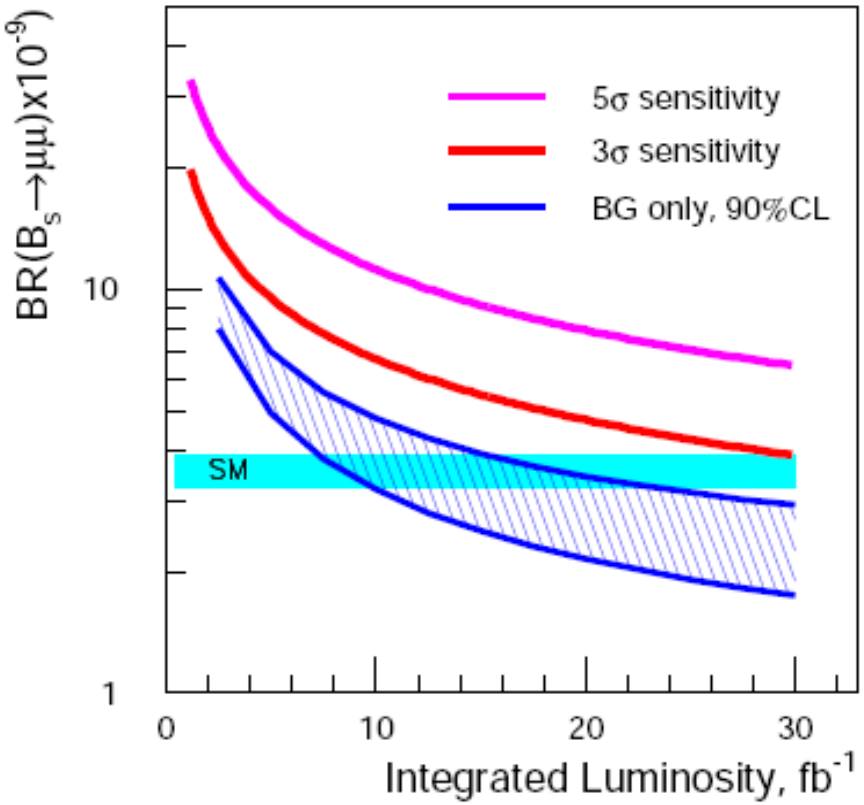
LHCb has 1000 times the bandwidth for μ triggers of ATLAS/CMS

LHCb/Atlas/CMS exclusion/observation

LHCb



ATLAS/CMS

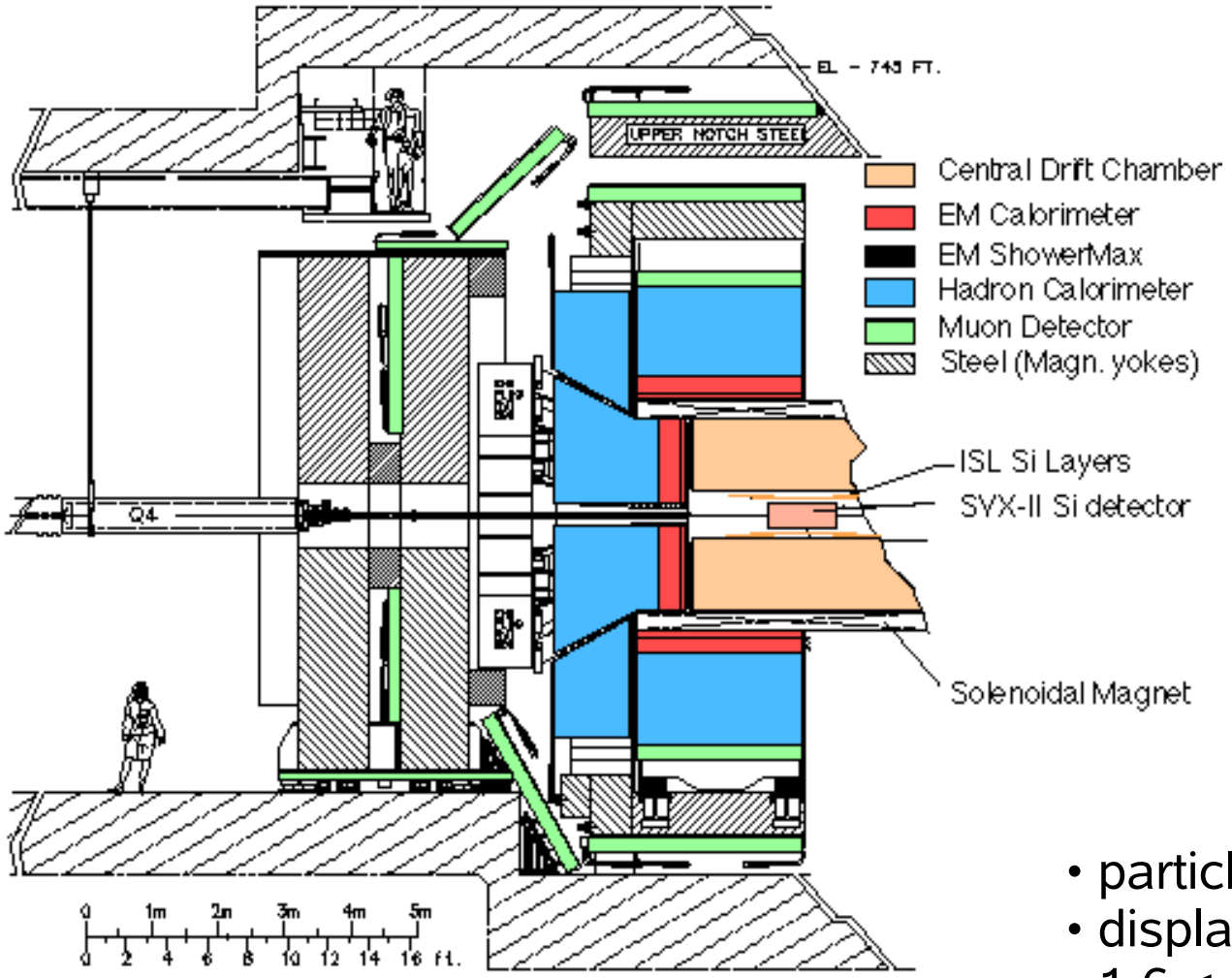


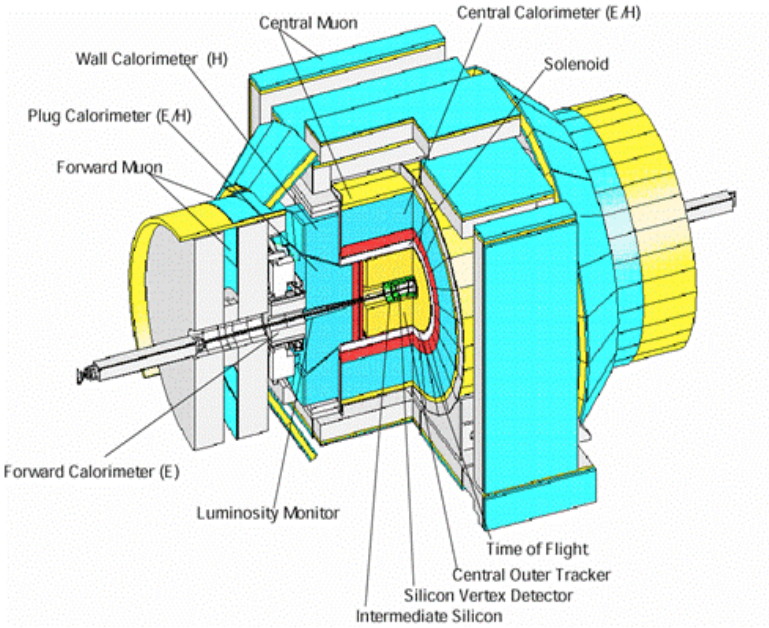
$B_s \to \mu^+ \mu^-$ 3σ observation (if BR(SM)) requires:

$\to$ 2 fb^{-1} for LHCb (1 year @ 2 10^{32} cm^{-2} s^{-1})

$\to$ 30 fb^{-1} for ATLAS/CMS (3 years @ 10^{33} cm^{-2} s^{-1})

CDF II Detector





- particle ID (TOF and dE/dx)
- displaced vertex trigger
- $1.6 < |\eta| < 3.6$