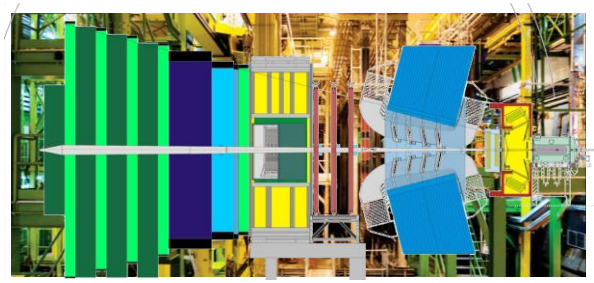


Geant4 Technical Forum
November 8th , 2011
CERN

Update on LHCb requirements

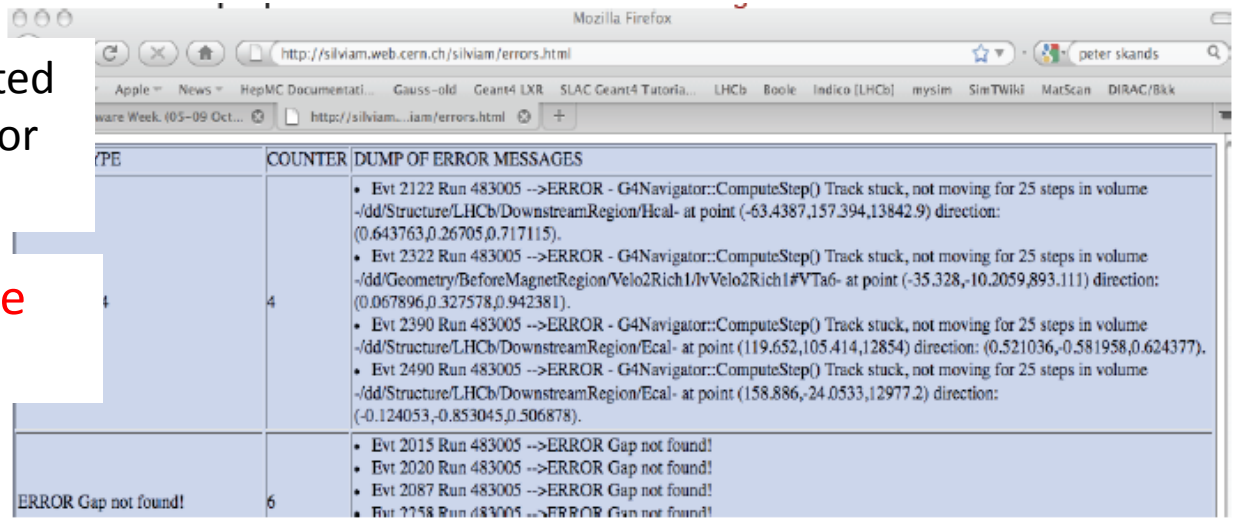
G. Corti (CERN), N. Watson (Birmingham)

Tracing problems in production

- Crashes and aborted events impact mass production
  - Protection introduced to protect from stuck particles and ping-pong effects
- Important to trace back reason of crashes and problems not leading to crashes (events or tracks aborted) during production
  - Impossible to look through ~50k jobs log files/day
  - Detect G4 errors at level of jobs during production and combine them for statistics
  - Retrieve full dump or error messages together with Run and Event Number to fully reproduce them and investigate them

Would be greatly facilitated by standardization of error messages

Understand this will be available in G4 9.5



TYPE	COUNTER	DUMP OF ERROR MESSAGES
	4	• Evt 2122 Run 483005 -->ERROR - G4Navigator::ComputeStep() Track stuck, not moving for 25 steps in volume -/dd/Structure/LHCb/DownstreamRegion/Hcal- at point (-63.4387,157.394,13842.9) direction: (0.643763,0.26705,0.717115). • Evt 2322 Run 483005 -->ERROR - G4Navigator::ComputeStep() Track stuck, not moving for 25 steps in volume -/dd/Geometry/BeforeMagnetRegion/Velo2Rich1/lvVelo2Rich1#VTa6- at point (-35.328,-10.2059,893.111) direction: (0.067896,0.327578,0.942381). • Evt 2390 Run 483005 -->ERROR - G4Navigator::ComputeStep() Track stuck, not moving for 25 steps in volume -/dd/Structure/LHCb/DownstreamRegion/Ecal- at point (119.652,105.414,12854) direction: (0.521036,-0.581958,0.624377). • Evt 2490 Run 483005 -->ERROR - G4Navigator::ComputeStep() Track stuck, not moving for 25 steps in volume -/dd/Structure/LHCb/DownstreamRegion/Ecal- at point (158.886,-24.0533,12977.2) direction: (-0.124053,-0.853045,0.506878).
ERROR Gap not found!	6	• Evt 2015 Run 483005 -->ERROR Gap not found! • Evt 2020 Run 483005 -->ERROR Gap not found! • Evt 2087 Run 483005 -->ERROR Gap not found! • Evt 2258 Run 483005 -->ERROR Gap not found!

Signature of Physics Builders

- In LHCb the physics lists are built at run time via a templated factory mechanism instanciating the Physics Builders
-
- But we also want to be able to have some configuration when constructing them and not duplicate code
- It would be very useful to have a uniform fixed signature for all the physics constructors, as far as the argument types are concerned. In other words, different constructors can take different arguments as far as the physical meaning of them is concerned, but all the signatures would have the same set of argument types.
  - e.g. Builder(string, string, int, float, double)

EM Physics

- Investigating some of the new physics lists proposed in 9.4 and in the next version 9.5
  - Will provide feed back and/or new requirements.

- We are currently investigating some puzzling aspects of the dedicated physics list provided to us by G4 for Multiple Scattering
  - But we are not ready to report it as we would like to understand better what is happening. Will discuss with the Geant4 experts in EM physics how to proceed in our investigation.