



Geant4 Issues for CMS

Outline

- Current usage
- Performance measures
- Requests



Default Version for CMS



- ❑ CMS has used **Geant4 9.2.p01** with a few private patches for all its production so far
 - Correction to `DistanceToIn` for cones
 - Protection in `G4QElasticCrossSection`
 - Some changes for visualization of Hits
- ❑ Plans to move to version **9.3** in near future. All validation tests seem to be positive
- ❑ Uses a CMS specific physics list. Start with the list **QGSP_BERT_EMV** and use “`ApplyCuts`” option to enhance performance – **QGSP_BERT_EML**



Performance (Calorimeter Only Geometry)



Use QGSP_BERT_EML physics list on slc5_ia32_gcc434

	9.2.p01	9.3
t-tbar		
CPU	77.6	76.2
Size	1.25	1.25
Memory	531	534
Zee		
CPU	45.3	42.5
Size	0.63	0.61
Memory	520	521
MinBias		
CPU	10.9	10.7
Size	0.17	0.17
Memory	512	513



Performance (Full Detector)



Use QGSP_BERT_EML physics list on slc5_amd64_gcc434

	9.2.p01	9.3
t-tbar		
CPU	87.0	81.0
Size	1.51	1.25
Memory	1403	1390
QCD(3.0-3.5TeV)		
CPU	334.6	315.5
Size	2.74	2.72
Memory	1510	1489
MinBias		
CPU	14.6	11.5
Size	0.26	0.25
Memory	1287	1286



Request



- ❑ Need to transport particles with magnetic and electric charges in electromagnetic field
- ❑ Capability to visualize subtracted solids defined by shapes with sharing surfaces (Old request)