

Tables for simulation

Prepare some web tables for the simulation part examining the log files as for the generator.

The script to produce the simulation tables should accept the same parameters as those for the generation: version of Gauss, configuration, optionally production ID. It should be done for the same number of jobs as those for the generator tables.

The pages produced should be separate pages from those of the generation. For each production it should list the Gauss version, and the XmlDDDB version.

1. Report the number of events written respect to those requested:

For each production you should look for:

```
GaussTape          INFO Events output: N2
GaussSim           SUCCESS Requested to process N1 events
```

In each job you will find for example:

```
GaussTape          INFO Events output: 498
GaussSim           SUCCESS Requested to process 500 events
```

Do the sum of N1 and the sum of N2 and print the results as:

Event written / requested = $\text{sum}(N1)/\text{sum}(N2)$

2. Report the type of particles that are not known to LHCb but known to Geant4:

Look for:

```
Message = 'PDGEncoding does not exist, G4 name is xxx
```

In a job you may find for example:

```
Message = 'PDGEncoding does not exist, G4 name is Li7[0.0]
```


Multiplicity table:

MCParticles	2.43e+03	+/- 1.4e+03
MCVertices	2.67e+03	+/- 1.5e+03
MCHits		
VeloPU	61.3	+/- 39
Velo	1.3e+03	+/- 7.6e+02
TT	422	+/- 2.6e+02
IT	423	+/- 2.9e+02
OT	1.15e+03	+/- 6.9e+02
Rich	2.4e+03	+/- 1.6e+03
Rich1	1.39e+03	+/- 1e+03
Rich2	1.02e+03	+/- 7e+02
Spd	1.47e+03	+/- 8.9e+02
Prs	2.82e+03	+/- 1.7e+03
Ecal	3.71e+03	+/- 2.2e+03
Hcal	509	+/- 3.1e+02
Muon	429	+/- 2.5e+02

4. Print summary table for the VeLo

You will find the following table at the end of the log file:

```

VeloGaussMoni      INFO -----
VeloGaussMoni      INFO                      - VeloGaussMoni table -
VeloGaussMoni      INFO -----
VeloGaussMoni      INFO | Number of MCHits/Event:      1299.15+/-34.1846
VeloGaussMoni      INFO | Number of PileUpMCHits/Event: 61.2992+/-1.75787
VeloGaussMoni      INFO -----

```

Combine the numbers in each line, the first is the average so make the averages, the second is the error so combine it the same way as for the error in the table above. The table should look something like: (VeloGaussMoni is the title of the table)

Velo Monitoring table

Number of MCHits/Event:	1299.15	+/- 34.1846
Number of PileUpMCHits/Event:	61.2992	+/- 1.75787

5. Print summary table for the RICHes:

You will find the following table at the end of the log file:

```

GetMCRichHitsAlg      INFO Av. # Invalid RICH flags           =      0.00 +-  0.00
GetMCRichHitsAlg      INFO Av. # MCRichHits                   : Rich1 = 1385.86 +-  1.67 Rich2 = 1018.24 +-
1.43
GetMCRichHitsAlg      INFO Av. # Invalid radiator hits       : Rich1 =   0.21 +-  0.02 Rich2 =   0.25 +-
0.02
GetMCRichHitsAlg      INFO Av. # Gas Quartz CK hits          : Rich1 =  43.57 +-  0.30 Rich2 =  27.34 +-
0.23
GetMCRichHitsAlg      INFO Av. # HPD Quartz CK hits          : Rich1 = 442.93 +-  0.94 Rich2 = 465.72 +-
0.97
GetMCRichHitsAlg      INFO Av. # Nitrogen CK hits            : Rich1 =   0.49 +-  0.03 Rich2 =   0.14 +-
0.02
GetMCRichHitsAlg      INFO Av. # Aero Filter CK hits         : Rich1 =   0.61 +-  0.04 Rich2 =   0.00 +-
0.00
GetMCRichHitsAlg      INFO Av. # Signal CK MCRichHits       : Aero =  163.37 +-  0.57 C4F10 =  734.68 +-
1.21 CF4 =  524.79 +-  1.03
GetMCRichHitsAlg      INFO Av. # Charged Track hits          : Aero =   0.00 +-  0.00 C4F10 =   0.00 +-
0.00 CF4 =   0.00 +-  0.00
GetMCRichHitsAlg      INFO Av. # Scattered hits              : Aero =   0.00 +-  0.00 C4F10 =   0.00 +-
0.00 CF4 =   0.00 +-  0.00
GetMCRichHitsAlg      INFO Av. # MCParticle-less hits        : Aero =   0.00 +-  0.00 C4F10 =   0.00 +-
0.00 CF4 =   0.00 +-  0.00
GetMCRichHitsAlg      INFO Av. # Aero hits per tile          :
GetMCRichHitsAlg      INFO tile = 0 hits =  1.35 +-  0.05 / event
GetMCRichHitsAlg      INFO tile = 1 hits =  0.64 +-  0.04 / event
GetMCRichHitsAlg      INFO tile = 2 hits = 30.49 +-  0.25 / event
GetMCRichHitsAlg      INFO tile = 3 hits =  6.37 +-  0.11 / event

```

```

GetMCRichHitsAlg      INFO      tile =  4 hits =    32.22 +-  0.25 / event
GetMCRichHitsAlg      INFO      tile =  5 hits =     2.29 +-  0.07 / event
GetMCRichHitsAlg      INFO      tile =  6 hits =     5.92 +-  0.11 / event
GetMCRichHitsAlg      INFO      tile =  7 hits =     0.94 +-  0.04 / event
GetMCRichHitsAlg      INFO      tile =  8 hits =     1.18 +-  0.05 / event
GetMCRichHitsAlg      INFO      tile =  9 hits =     0.62 +-  0.04 / event
GetMCRichHitsAlg      INFO      tile = 10 hits =    31.37 +-  0.25 / event
GetMCRichHitsAlg      INFO      tile = 11 hits =     6.91 +-  0.12 / event
GetMCRichHitsAlg      INFO      tile = 12 hits =    32.66 +-  0.26 / event
GetMCRichHitsAlg      INFO      tile = 13 hits =     2.50 +-  0.07 / event
GetMCRichHitsAlg      INFO      tile = 14 hits =     6.60 +-  0.12 / event
GetMCRichHitsAlg      INFO      tile = 15 hits =     1.32 +-  0.05 / event

```

Make a similar table with the same structure where the numbers are replaced by the average obtained combining the numbers from the various log files.

The table should look like this:

Av. # Invalid RICH flags	0.00 +- 0.00
--------------------------	--------------

Av. #	Rich1	Rich2
MCRichHits	1385.86 +- 1.67	1018.24 +- 1.43
Invalid radiator hits	0.21 +- 0.02	0.25 +- 0.02
Gas Quartz CK hits	43.57 +- 0.30	27.34 +- 0.23
HPD Quartz CK hits	442.93 +- 0.94	465.72 +- 0.97
Nitrogen CK hits	0.49 +- 0.03	0.14 +- 0.02

Av. #	Aero	C4F10	CF4
Signal CK MCRichHits	163.37 +- 0.57	734.68 +- 1.21	524.79 +- 1.03
Charged Track hits	0.00 +- 0.00	0.00 +- 0.00	0.00 +- 0.00
Scattered hits	0.00 +- 0.00	0.00 +- 0.00	0.00 +- 0.00
MCParticle-less hits	0.00 +- 0.00	0.00 +- 0.00	0.00 +- 0.00

Av. # Aero hits per tile	
tile	Hits/event
0	1.35 +/- 0.05
1	0.64 +/- 0.04
2	30.49 +/- 0.25
3	6.37 +/- 0.11
4	32.22 +/- 0.25
5	2.29 +/- 0.07
6	5.92 +/- 0.11
7	0.94 +/- 0.04
8	1.18 +/- 0.05
9	0.62 +/- 0.04
10	31.37 +/- 0.25
11	6.91 +/- 0.12
12	32.66 +/-0.26
13	2.50 +/- 0.07
14	6.60 +/- 0.12
15	1.32 +/- 0.05

6. Print summary table for the MUON:

You will find the following table at the end of the log file:

```

MuonHitChecker      INFO -----
MuonHitChecker      INFO          Muon Monitoring Table
MuonHitChecker      INFO -----
MuonHitChecker      INFO  M1          M2          M3          M4          M5
MuonHitChecker      INFO 73.382  20.066  5.147  3.012  2.293  R1
MuonHitChecker      INFO 87.030  13.751  3.227  2.367  2.000  R2
MuonHitChecker      INFO 92.297  7.721  3.349  2.797  2.327  R3
MuonHitChecker      INFO 91.223  9.667  3.281  2.353  2.028  R4
MuonHitChecker      INFO -----

```

```

MuonHitChecker      INFO ----- Integrated over regions -----
MuonHitChecker      INFO -----
MuonHitChecker      INFO 343.932  51.205  15.004  10.530  8.649  allR

```

Make a similar table without the part at the beginning making the average of the numbers in the same position in the table (M1-R1, M2-R1, M3-R1, M4-R1, M5-R1, M1-R2, etc.).

The table should look like:

:

Muon Monitoring Table

M1	M2	M3	M4	M5	
73.382	20.066	5.147	3.012	2.293	R1
87.030	13.751	3.227	2.367	2.000	R2
92.297	7.721	3.349	2.797	2.327	R3
91.223	9.667	3.281	2.353	2.028	R4
Integrated over regions					
343.932	51.205	15.004	10.530	8.649	allR