MC production - setup validation and MC calibration

[JIRA] (ATO-245) Create performance generator to quantify the performance of the detector tracking and PID capabilities

Optimal validation of detector setup - generation of the performance figures

Fixed input generator

- automatic regression test possible
- alarms possible
- standard QA performance variables and system usage variables (CPU , VM) used

Using already existing components

- regularly running StandardQA and ExpertQA
- TStatToolkit functionality for regression trending/alarms

Tracking performance studies

- Pt resolution 10-20 bins x 1000 particles in 1/pt bins (as I did in PPR Volume 2)

- 1000 events x 10 tracks (jets)

- **O(10-100) jobs x 100 events**

  - see generator on next slide

- One computer node with N cores- e.g my laptop

Relativistic dEdx studies

- the same sample from above

Separation power monitoring

- admixture of electrons

Performance generator to be written as an AliGenerator. Should enable fast performance studies using minimal CPU resources

- Standard AliGenBox is not appropriate for such studies. Fro high pt particles background within JET is important and has to be reproduced.

Realistic jets created: AliGenPerformance- Configuration ()

- distribution of 1/energy of jets - user defined TF1 - default flat
- standard geometrical acceptance -user defined TF1 for phi and TF1 for theta - default flat
- time offset configured from outside or randomly generated (not fixed yet)
  - correlation between the TO - how to handle it?
- number of jets (Poison with mean as parameter)
- particle distributions (flavor) - TF1 - default flat (u,d,s,c,b,t)

Code committed and used

- http://git.cern.ch/pubweb/?p=AliRoot.git;a=commitdiff;h=46be62ae84a9 3f0732be0e894387376b5886ebb0

Generator as described above + StandardQA TPC was used in the SAMPA simulation performance studies

- [JIRA] (ATO-129) AliRoot<->SAMPA code . Common mode effect investigation.
- Scan of the SAMPA parameters at different multiplicity bins
  - 16 parameters x 20 multiplicity bins x O(10) jobs

TPC MC data calibration

- calibration of parameters adopting to modification of MC parameters (gain, gas mixture, reco. algorithm)
- MC → Reco → Calibration → StandardQA
  - iterative procedure
- GSI MC preproduction characterized by new OCDB entries, configuaration (OCDB symbolic link snapshot, XML dum of critical variables) and StandardQA (ExpertQA to be added)

Extensive MC validation - detector and tracking part can be done with very limited resources using predefined Performance generators

Important to agree on the exact configuration. From some moment generator to be fixed to make regression test automatic

Presented generators extensively used for the SAMPA performance studies.

My proposal:

Should be part of the MC preproduction , detector and tracking validation for tuple (AliRoot, Period, pass)

- relate also to activities within [JIRA] (PWGPP-123) MC production database and JIRA ticket
  - MC DB project status report (Igor Lakomov)
  - https://indico.cern.ch/event/460232/