Online QA status

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https://alice.its.cern.ch/jira/browse/ATO-122

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Motivation

- Upgrade of TPC using GEM technology will require additional monitoring tools.
  - Track reconstruction will occur in more challenging environment
  - Need immediate feedback on accuracy of tracking parameters.

- HLT can reconstruct whole event online:
  - Creates flatesd object.
  - Flatesd contain AliVEvent, AliVTrack objects

- Proposed solution:
  - Change current TPC QA classes to make them to read flatesds
  - Improve speed/memory of current QA classes by avoiding use of THnSparse
  - Test in run 2, implement in run 3

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How it works

- TPC QA classes found aliphysics/PWGPP/Ali AliPerformance*

- Name of development branch feature-onlineqa
  - ✓ Recently rebased to master on Sunday
  - ✓ Grid package v5-08-03a-01-onlineqa3_TESTGCC-1

- AliTPCPerformaceTPC(const Char_t* name="AliTPCPerformaceTPC", const Char_t* title="AliTPCPerformaceTPC",Int_t analysisMode=0,Bool_t hptGenerator=kFALSE, Int_t run=-1, Bool_t highMult = kFALSE, **Bool_t useSparse = kTRUE**);
  - ✓ **kTRUE** = Default (Fills TNspharse, projects into histograms)
  - ✓ **kFALSE** = Online mode (writes directory into histograms)

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How it works
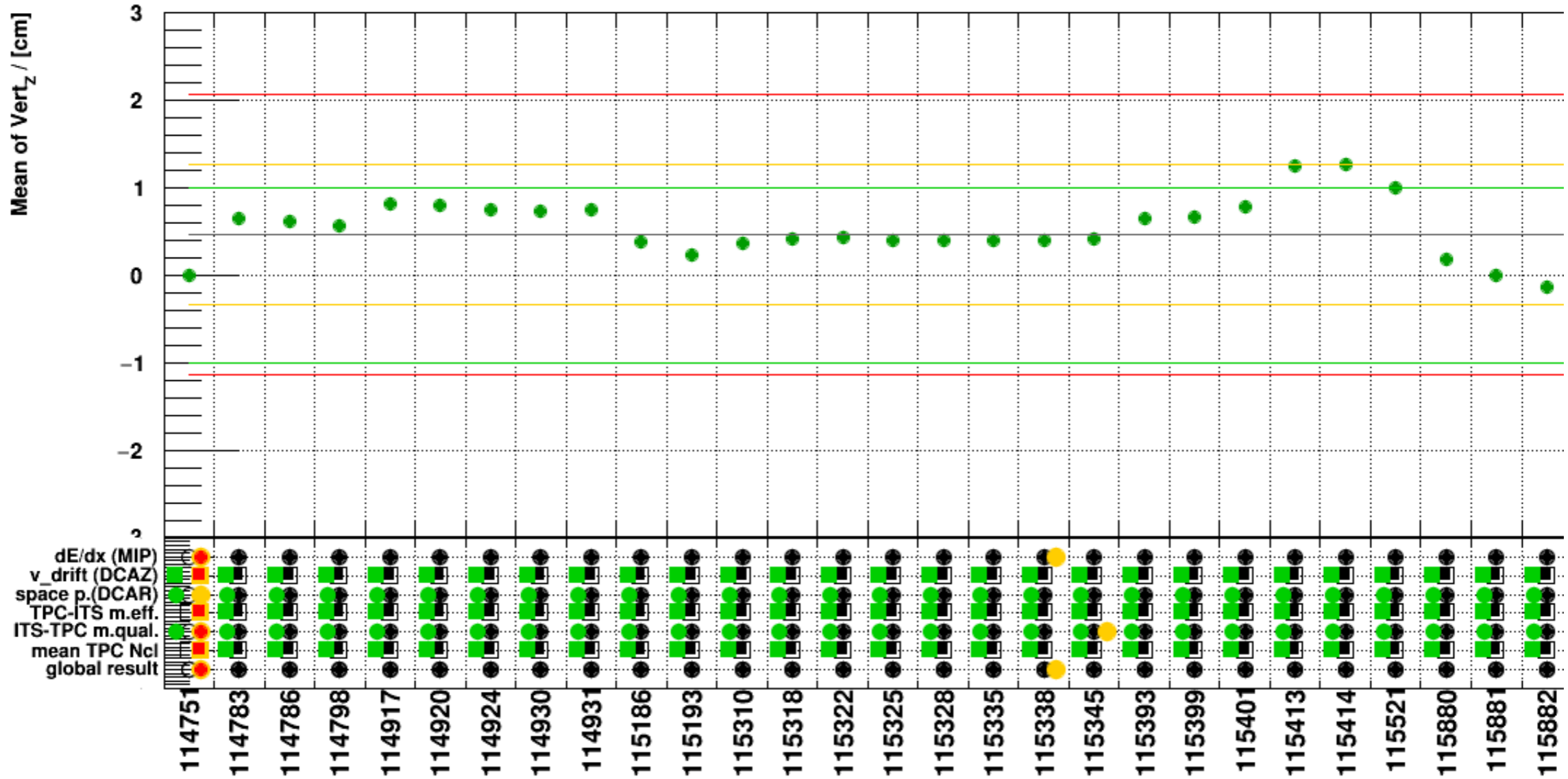
- Both default and online modes creates histograms in **Analysis.root** file
  - ✓ AliTPCPerformanceSummary creates tree in **trending.root** of means/ sigmas

Performance (offline testing)

- Size of TPC_PerformanceQA object for ~2500 events:
  - ✓ Default mode 19M (histogram+ THnSparse)
  - ✓ Online mode 692K (histogram only)

- Merging 14 Analysis.root files:
  - ✓ Default mode 10.97 secs
  - ✓ Online mode 2.68 sec

- Event processing time within AliPerformanceTPC::Exec()
  - ✓ Default mode 6.1 ms (Fill 3 THnSparse)
  - ✓ Online mode 6.44 ms (Fill 26 histograms directly)

- trending.root files produced in both Online and Default modes contain same values
  - ✓ https://indico.cern.ch/event/361739/
  - ✓ https://indico.cern.ch/event/361738/

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Current status

- Default and Online modes work offline running on locally on normal esds

- Attempting to run QA classes with HLT emulator:
  - ✓ aliroot "$ALICE_ROOT/HLT/global/physics/macros/ testconfigCalib.C"'("GLOBAL-flat-esd-converter","AddTaskMacro= $ALICE_ROOT/HLT/global/macros/AddTaskAnalysisTaskExampleV.C() WriteAnalysisToFile=1")' …
  - ✓ Having some issues using the simple analysis task

- Grid running:
  - ✓ Jobs run in Default mode work fine
  - ✓ Jobs in Online mode crash. Likely need to add extra pointer protection.

6

Next steps

- Adding additional timing information:
    - ✓ Currently only run start-time, end-time, and duration store in trending tree
    - ✓ Smaller unit needed to look at things within run

- Decide running mode:
    - ✓ Online QA analyse all events or subset e.g 1/10?
    - ✓ Roughly 6ms needed to process event

- Implement web interface for online running

- Provide QA for space point distortions by end of 2016

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