Online beam position measurement and monitoring with ATLAS

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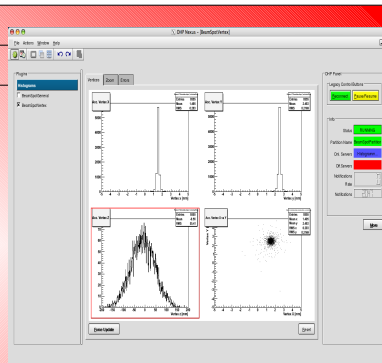And Stanford University

Beamspot measurement schema

L2 Trigger Farm

Beamspot Algorithm

Histogrammed Beam position Parameters
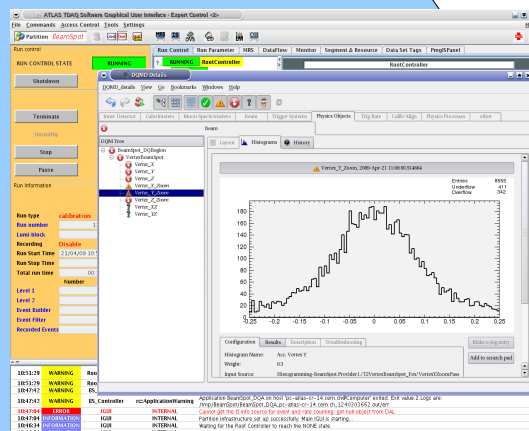* published every Luminosity block
* Displayed in ACR

DQM-F
Data Quality Monitoring Framework

* Analyzes histograms
* Published results

DQM-D
DQM Display in ATLAS Control Room

ATLAS LHC Communication Applications (PVSS)

LHC Control Room

Beam position parameters Delivered to LHC

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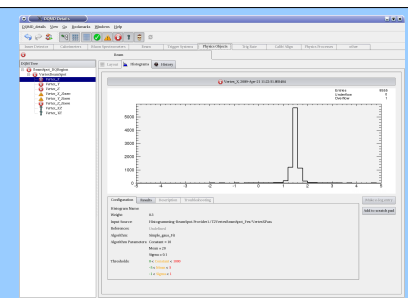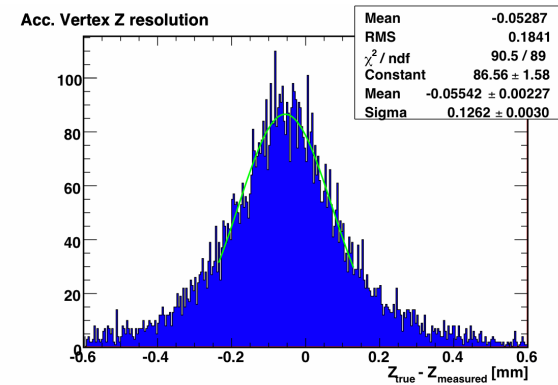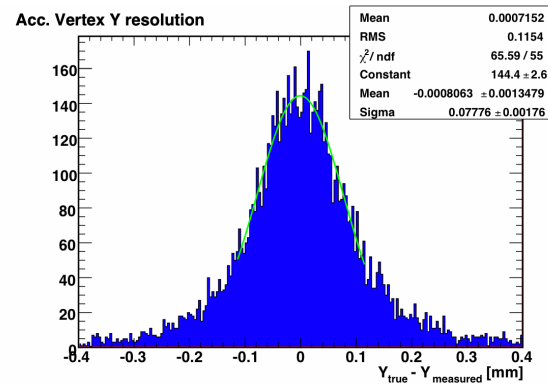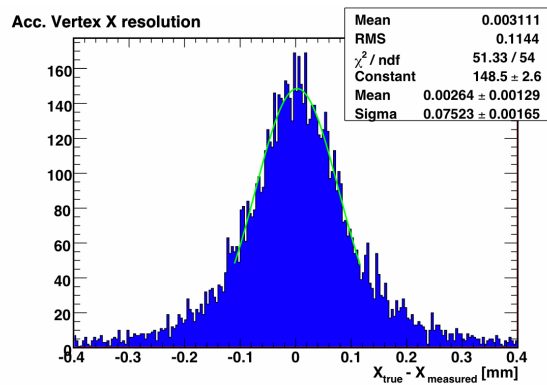
Measurement details
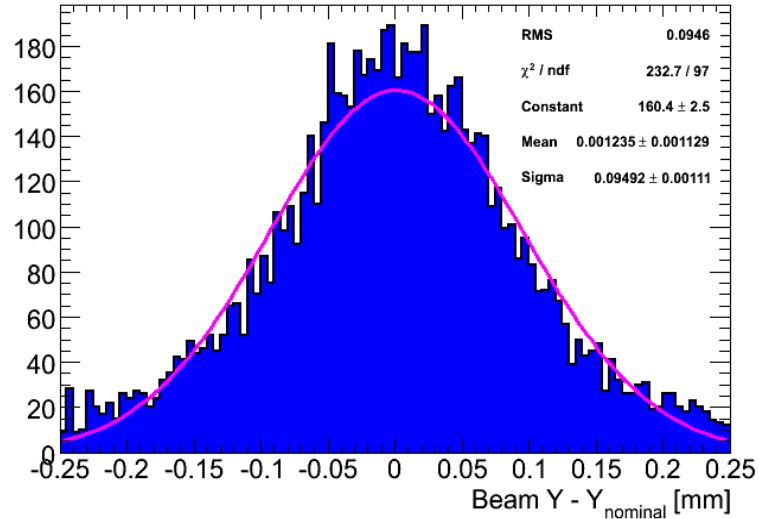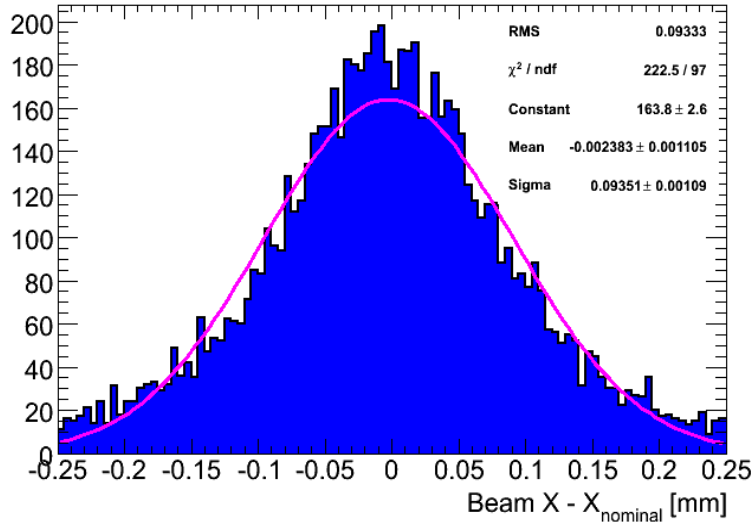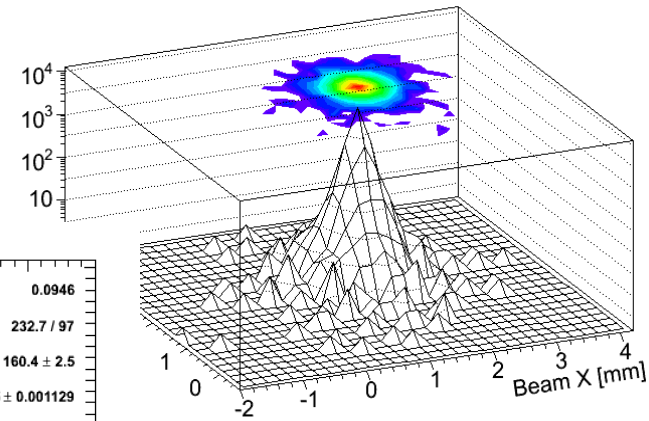
- Use previous beam spot measurement at *nominal* reference in the data
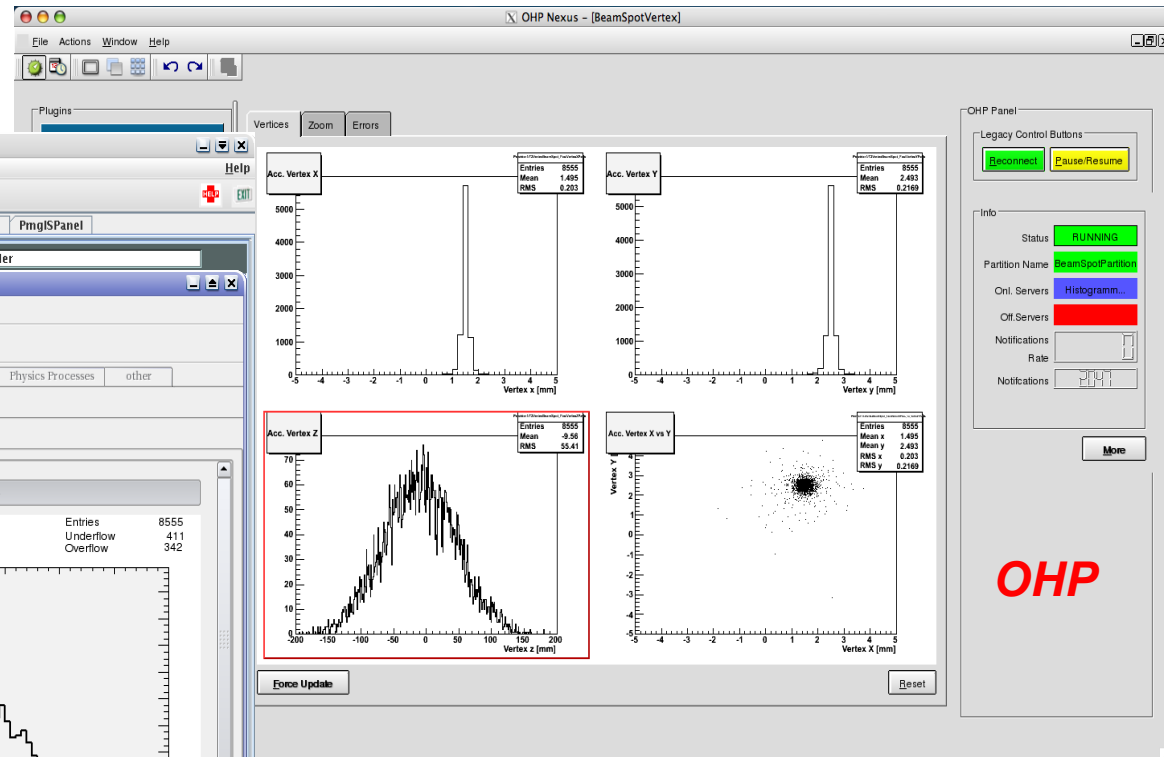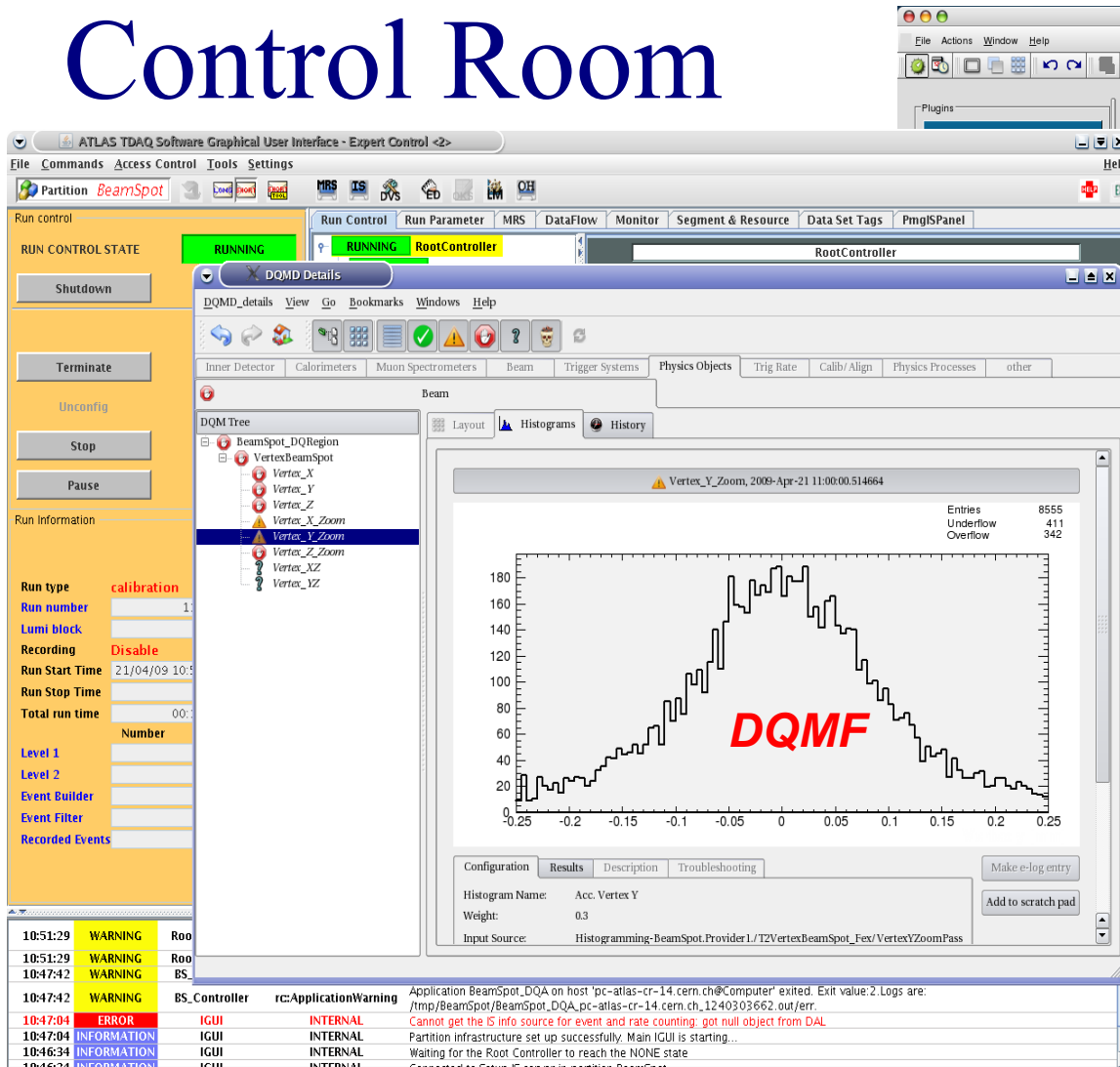- Use MC truth information when testing with simulation

Online monitoring in the ATLAS Control Room

Have both passive display of all histograms (*Online Histogram Presenter*, OHP) as well as DQM framework for processing and publishing results

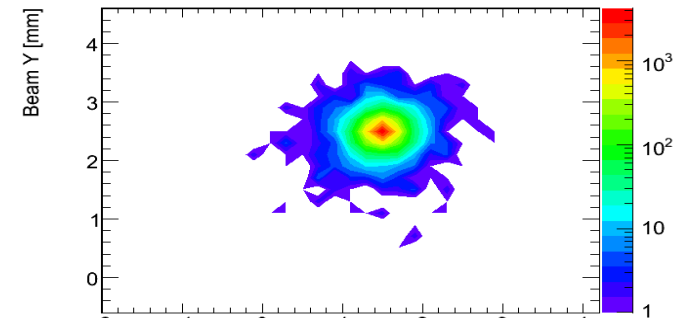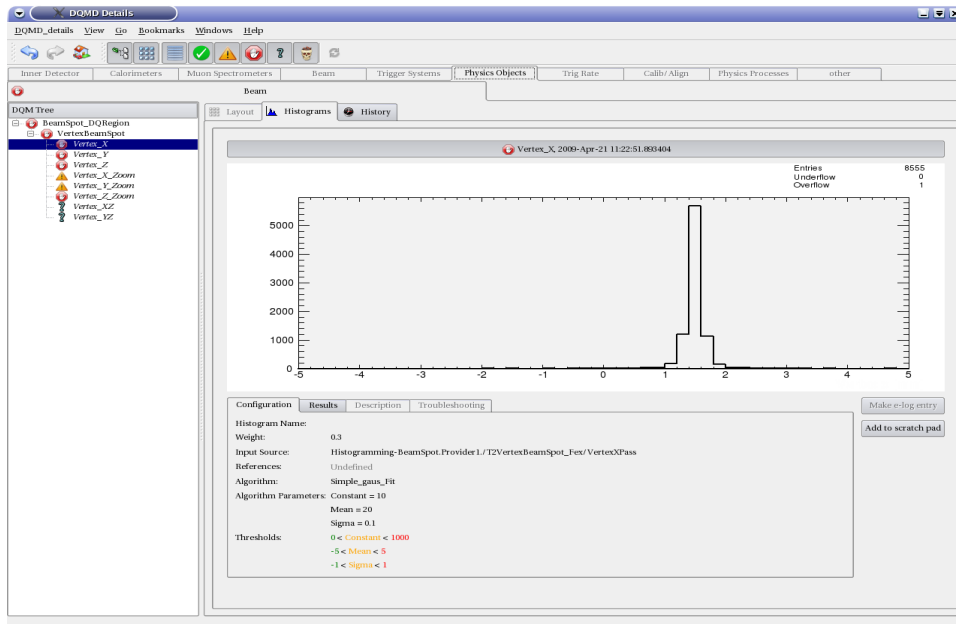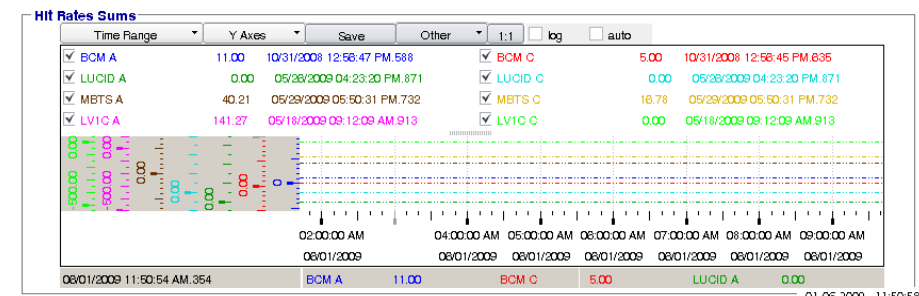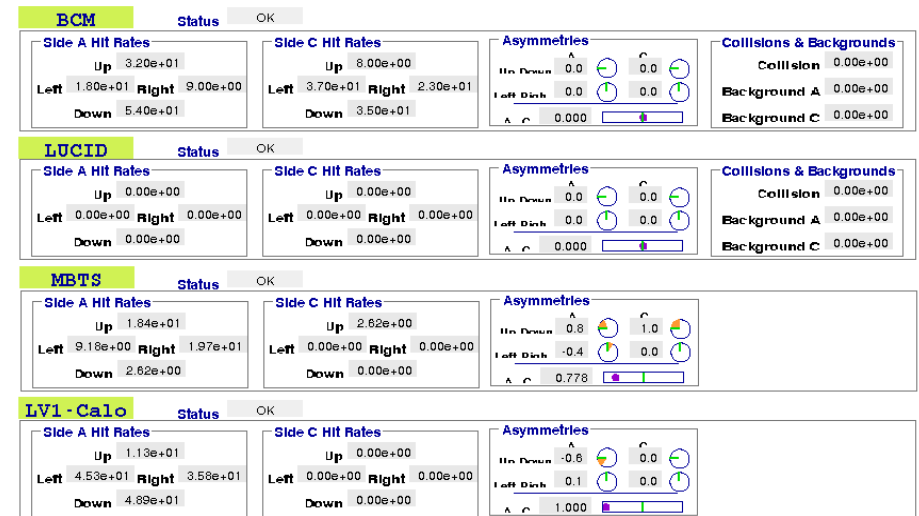# Delivering beam position information to the LHC

ATLAS Beam Conditions (Hit Rates)

Beam position information extracted using DQMF and fed into central ATLAS-LHC communication system.

Beamspot parameters delivered to LHC control room, along with other lumi. Information such as hit rates in lumi. Counters and rate of level-1 triggers.