

Updates in CgemBoss665g

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Generator

- ▶ CosmicGenerator-00-00-11
add acceptance from two planes (top and bottom) (by [Xiao-Ling Lu, L.-L. Wang](#))

Data model and IO

Updates by L.-L. Wang and Yao Zhang

- ▶ McTruth-00-04-10 (used in TDS)
add more information in MdcMCHit and CgemMCHit to separate MC hits from different particles and to associate digis (clusters) to MC hits
- ▶ RootEventData-00-05-14
data model for root files in rtraw, rec, and dst
- ▶ RootCnvSvc-04-01-16
conversions between data in TDS and data in root files
(to read inputs and write outputs)

CGEM geometry

- ▶ CgemGeomSvc-00-00-37 a version merged the following updates:
 - ▶ Final CGEM geometry (by [Isabella Garzia](#))
 - ▶ Alignment functions and parameters for run 17 (by [Ai-Qiang Guo](#))
 - ▶ More geometry calculation functions (by [L.-L. Wang](#))
- ▶ CgemSim-01-00-36
 - ▶ Final CGEM geometry (by [Isabella Garzia](#))
 - ▶ Mis-aligned effect (by [Ling-Hui Wu](#))
 - ▶ Filling more formation (e.g. matching) in CgemMcHit (by [L.-L. Wang](#))

MDC simulation and Bes simulation

- ▶ MdcSim-00-04-06
Filling more formation (including matching) in MdcMcHit
- ▶ BesSim-00-04-18
write out mis-aligned positions of CGEM hits, CgemMcHits, MdcMcHits

by [L.-L. Wang](#)

CGEM full digitization

Not fixed

- ▶ In current CgemBoss665g: CgemDigitizerSvc-00-00-33
- ▶ Latest version in CVS: CgemDigitizerSvc-00-00-35
 - ▶ New implementation of electronics (by [Hang Zhou](#))
 - ▶ FFT (Fast Fourier Transform) convolution (by [Ze-Heng Zhang](#))
 - ▶ Saturation and some crash issues fixing (by [L.-L. Wang](#))
- ▶ Other issue(s)
 - ▶ Memory consuming is high in some cases reduced but more efforts needed

Reconstruction

- ▶ CgemClusterCreate-00-00-34
updates in tests for QA (by [Lia Lavezzi](#))
associate CgemMCHits and toy clusters (by [L.-L. Wang](#))
- ▶ DotsConnection-00-00-05
new global track fitting with least-square method (by [Ling-Hui Wu, L.-L. Wang](#))
- ▶ HoughTransAlg-00-00-18
use new global track fitting and new optimizations (by [L.-L. Wang](#))
- ▶ GdmlManagement-00-00-36, KalFitAlg-00-15-13
final CGEM geometry and material (by [L.-L. Wang](#))

Others

- ▶ ReadCosmicRayData-00-00-26 (updated by [Lia Lavezzi](#))
fixed comment to hit qualityy in LUT
added TestGeometry to print info about GEM geomtry
fixed the comment for east(-1) and west(+1) in CgemLUTReader
- ▶ BesVisLib-00-06-10
solved a random crash problem, fixed the charge & time display for CGEM strips (by [L.-L. Wang](#))
- ▶ TestRelease-00-00-88
update requirement

Summary

New in CgemBoss665g:

- ▶ Final geometry
- ▶ Full digitization
- ▶ Matching information between MC hits and digis (or clusters)
- ▶ Optimized track reconstruction
- ▶ Alignment of CGEM 1 & 2 with cosmic-ray data run 17
- ▶ Latest QA