Status of the simulation and reconstruction in BmnRoot

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for BM@N software meeting

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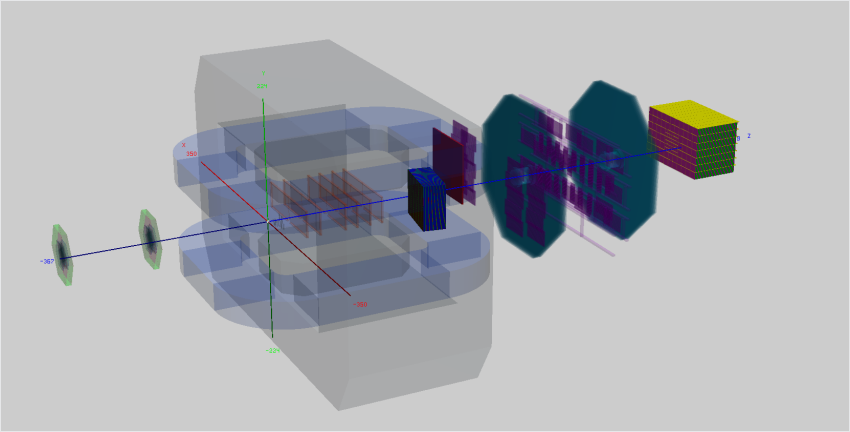
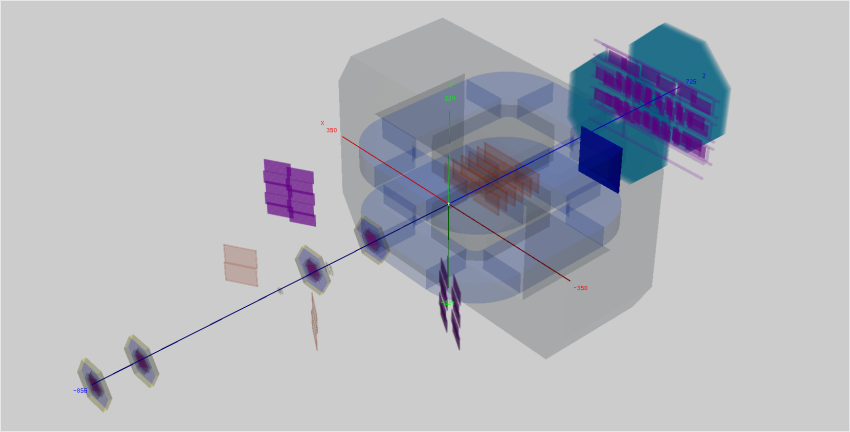
Current BM@N RUN-7 geometry



Current SRC geometry

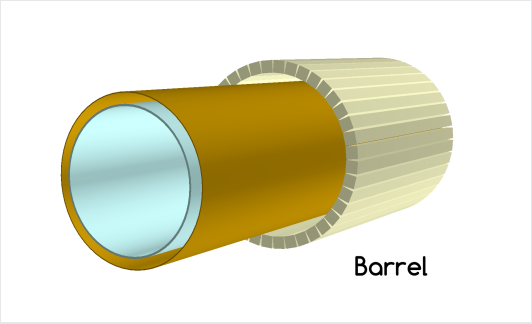


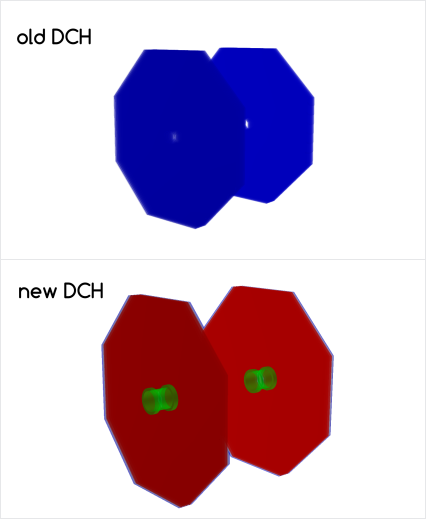
Detector Simulation Geometry for BM@N RUN-7

Detector	Geometry	Version	Comments
BD	bd_v1_run7.geo	Apr 26, 2019	Update is coming up
MWPC	MWPC_RunSpring2018.root	–	Under review
Silicon	Silicon_RunSpring2018.root	Nov 1, 2018	
GEM	GEMS_RunSpring2018.root	Aug 15, 2018	
CSC	CSC_RunSpring2018.root	Jun 24, 2019	
DCH	DCH_RunSpring2018.root	Aug 23, 2019	
TOF-400	TOF400_RUN7.root	Jan 18, 2018	Update is coming up
TOF-700	tof700_run7_with_support.root	Jan 15, 2018	
ECAL	ECAL_v2_run7_pos4.root	Aug 12, 2019	(5 positions)
ZDC	rootgeom_bmnzdc_104mods_v1_Zpos_(...)_14mm.root	Apr 30, 2019	Too detailed name

We have to clean up unused geo-files from geometry folder.

New geometries





Digitization of MC information

Detector	SIM-DIGI	Comments
Triggers	NO	Do we need it?
MWPC	YES	Under review
Silicon	YES	Full digitization chain
GEM	YES	Full digitization chain
CSC	YES	Full digitization chain
DCH	NO	Is it actual?
TOF-400	NO	
TOF-700	NO	
ECAL	NO(?)	
ZDC	NO(?)	

HitFinder/HitProducer

Detector	Sim	Exp	Comments
Triggers	NO	NO	Do we need it?
MWPC	HF	hits from tracks	Two versions. Under review
Silicon	HF	HF	Cluster finder with CoG, fakes production
GEM	HF	HF	Cluster finder with CoG, fakes production
CSC	HF	HF	Cluster finder with CoG, fakes production
DCH	NO	hits from tracks	Track segments by wires
TOF-400	HP	HF	Strips inefficiency, multichannel activation
TOF-700	HP	HF	Strips inefficiency, multichannel activation
ECAL	?	?	
ZDC	?	?	

GlobalTracking

Main rule: Global track is GEM track + something/nothing
Question: What to do with partial matchings?

- DCH + TOF400
- DCH + TOF700
- DCH + CSC
- Silicon + MWPC
- ...

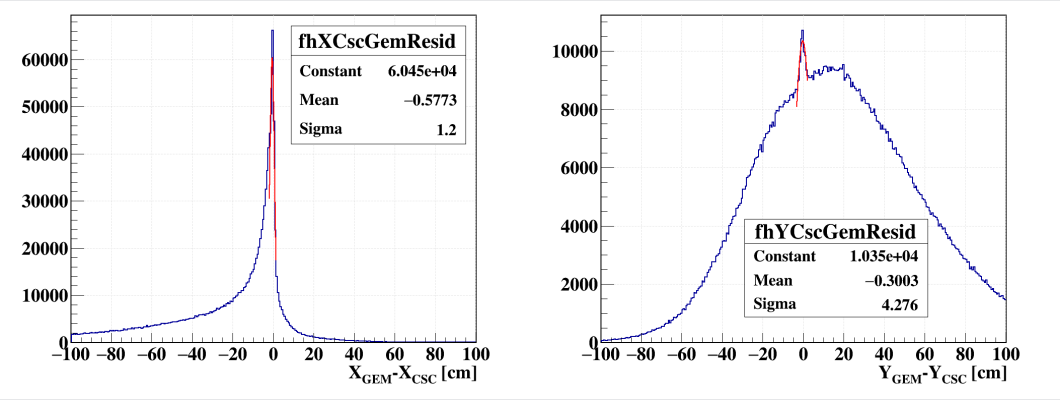
Now they are standalone codes.
Answer: Commit them into `bmnroot/macro/globaltracking`
So, we can test algorithms and choose the best for `run_reco_bmn.C`

GlobalTracking

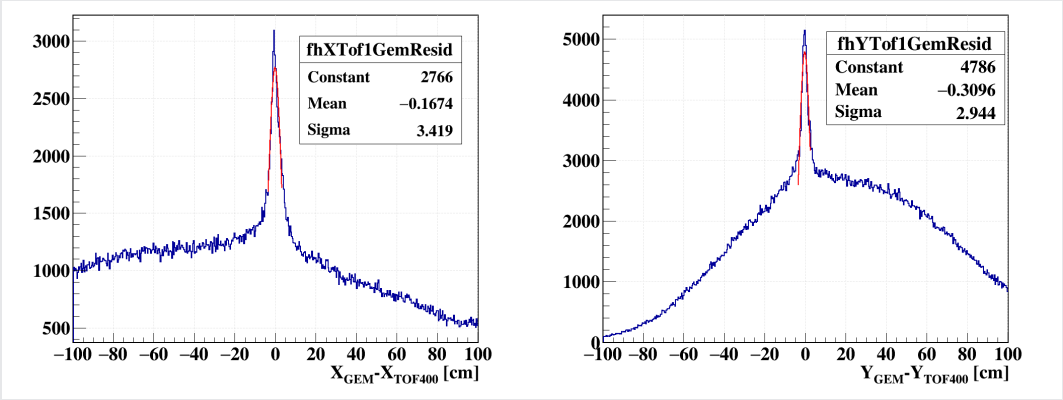
BmnGlobalTracking:

- Alignment constants are hardcoded
- No matching for Silicon and MWPC implemented
- Matching for CSC, TOFs and DCHs implemented
- Have to be checked by other groups

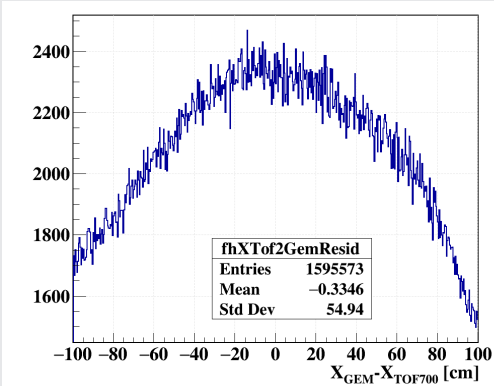
GEM-CSC matching

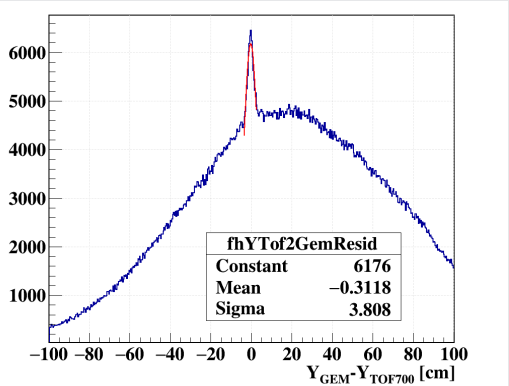


GEM-TOF400 matching



GEM-TOF700 matching





Nearest plans

- Finish global matching both for BM@N and SRC
- Clean up in geometry, input and detector folders
- Move parameters (alignment, calibrations, ...) into DB
- Add possibility to work in multithread approach