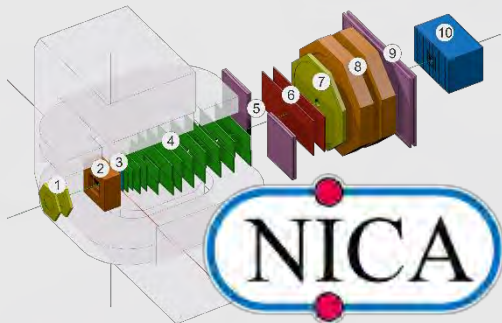


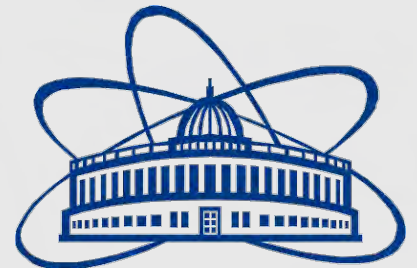
Production version of BM@N Geometry Database

Akishina E.P.¹, Alexandrov E.I.¹, Alexandrov I.N.¹,
Chebotov A.I.¹, Filozova I.A.¹, Gertsenberger K.V.¹,
Ivanov V.V.¹

¹JINR, Dubna

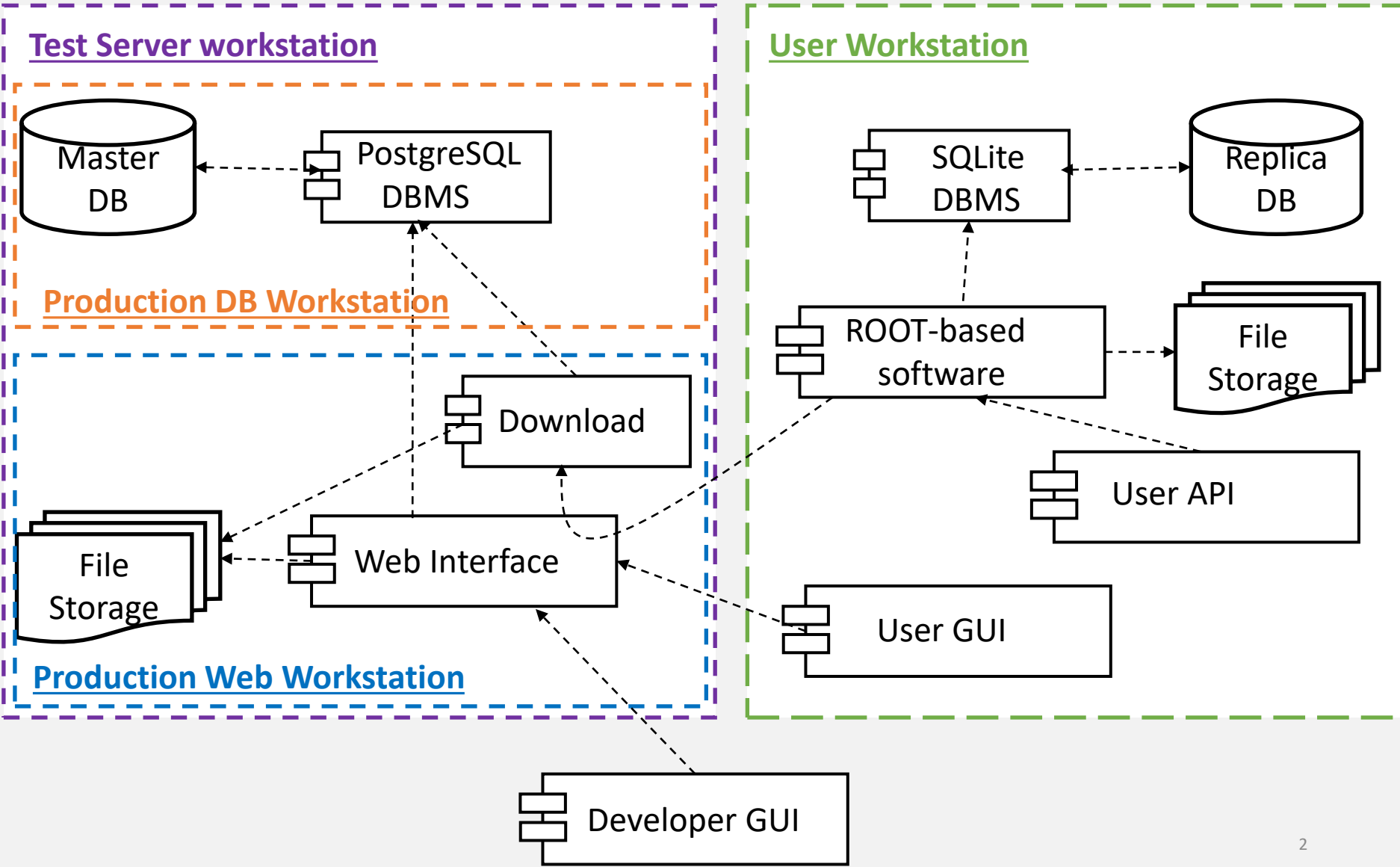


[12th Collaboration Meeting of the
BM@N, 12-18 May 2024](#)



Joint Institute for Nuclear Research

General architecture of the Geometry Information System



Production computers for BM@N Geometry Database

- DB Server
 - Proxmox container
 - bmn-geodb.he.jinr.ru
 - 4 cores
 - 8 GB RAM
 - 30GB SSD
 - AlmaLinux 9
 - PostgreSQL 14

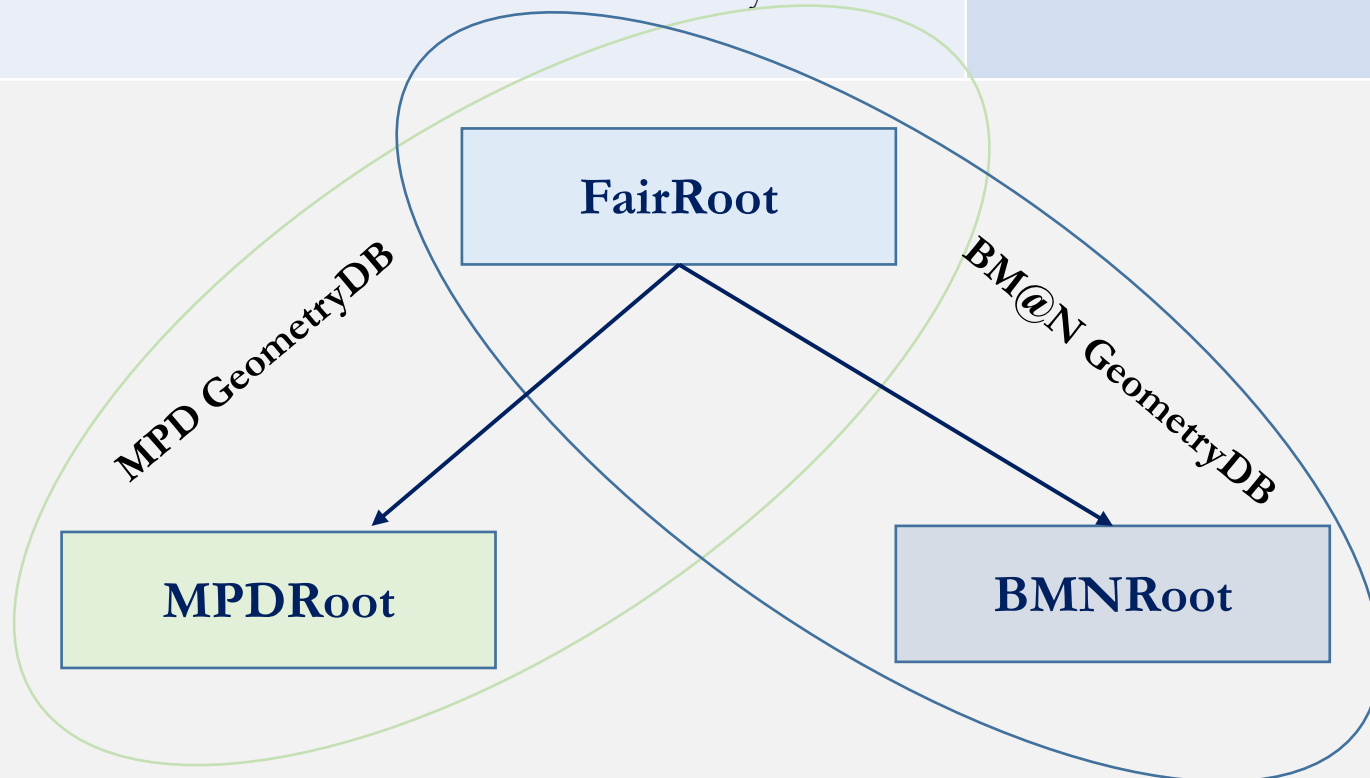
- WEB Server
 - Virtual Machine
 - Bmn-web.jinr.ru
 - 16 cores
 - 32 GB RAM
 - 200 GB SSD
 - Ubuntu 22.04.4

New Installation

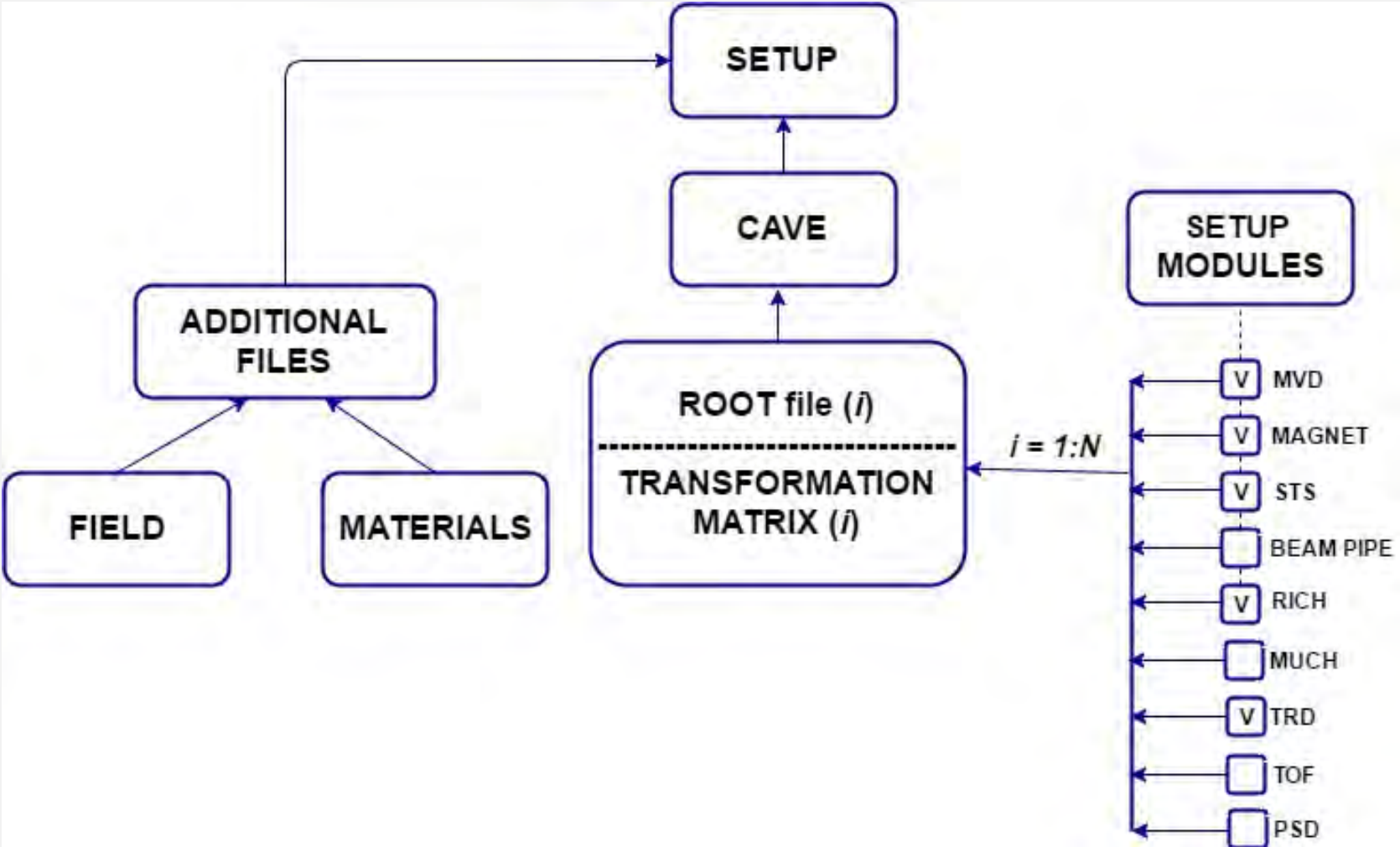
- Git: https://git.jinr.ru/nica_db/geo_platform
- Use common installation of BM@N services
- Support separate install DB and web
- Support install in Docker
- Support Keycloak authentication
- Downgrade requirements of additional software
 - Was FairSofr
 - Now only ROOT
- Install additional software (ROOT) while first starting the Web service

BM@N & MPD

Common features	Differences
Approaches to the methods of simulations and reconstructions	The sets of Detectors
Software: FAIRSOFT, FAIRROOT RunManager: <ul style="list-style-type: none">➤ FairRunSim for the simulation runs➤ FairRunAna for the reconstruction or analysis runs	



Setup Structure



Geometry Setups

Geometry Setups



Geometry DataBase

Tag	Revision	Date	Description	Author	Status	Last Modified	Download Setup	Download Root File
Run8	dev_14.04.2024	2024-05-06	git clone was done 14.04.2024	aleksand	Approved		Download	Download

Menu

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[VIEW MATERIALS](#)

[VIEW MAGNETIC FIELDS](#)

EDIT GEOMETRY

Get in touch

[✉ Konstantin Gertsenberger](#)

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<https://bmn-geo.jinr.ru/>

Setup Run8


	Tag	Date	Author	Description
MAGNET	magnet_modified	2024-04-27	aleksand	magnet_modified.root
Target	target_Csl	2024-04-27	aleksand	target_Csl.geo
SIBT	SIBT_Run8	2024-04-27	aleksand	SIBT_Run8.root
BD	BD_run8_v1	2024-04-27	aleksand	BD_run8_v1
FD	FD_run8	2024-04-27	aleksand	FD_run8.root
SILICON	Silicon_Run8	2024-04-27	aleksand	Silicon_Run8.root
Sts	GEMS_Run8_detailed	2024-04-27	aleksand	GEMS_Run8_detailed.root
CSC	FullCSC_Run8_detailed	2024-04-27	aleksand	FullCSC_Run8_detailed.root
TOF1	TOF400_RUN8_v2	2024-05-02	aleksand	TOF400_RUN8_v2.root
DCH	DCH_Run8	2024-05-02	aleksand	DCH_Run8.root


Tags:
run8

Revisions:
dev_14.04.2024

Create/Edit module


Create new module


BM@N Geometry DataBase  User: aleksand [CONFIGURE USER ACCESS](#) [LOGOUT](#)

Module Name*		
Args*		Revision Number* 1 
Sensitivity* Active		Class Name* Bmn

[ADD MODULE](#) [CANCEL](#)

Add new revision

BM@N Geometry DataBase  User: aleksand [CONFIGURE USER ACCESS](#) [LOGOUT](#)

Module Type: BD	Module Name: BD	Revision Number* 1 
Sensitivity* Active		Class Name* BmnBD

[ADD REVISION](#) [CANCEL](#)










Add new geometry file

Geometry Files

New

CREATE NEW FILE

You can edit the **Description** field. A new value is saved when the focus is lost.

Module	Revision	Class Name	File Tag	Transformation	Date	Author	Description	
BD	1	BmnBd	BD_run8_v1		2024-04-27	aleksand	BD_run8_v1	✗
CAVE	1	FairCave	cave		2024-03-31	administrato	init	✗
CSC	1	BmnCSC	FullCSC_Run8_detailed		2024-04-27	aleksand	FullCSC_Run8_detailed.root	✗
DCH	1	BmnDch	DCH_Run8		2024-05-02	aleksand	DCH_Run8.root	✗
FD	1	BmnFD	FD_run8		2024-04-27	aleksand	FD_run8.root	✗
FHCAL	1	BmnFHCal	FHCal_for_run8_cm_rotationY_1.6deg_v1		2024-05-02	aleksand	FHCal_for_run8_CBM_20mods_NICA_34mods_54mods_hole_Zpos_977.8cm_Xshift_65.30cm_Yshift-0.8cm_rotationY_1.6deg_v1.root	✗
HODO	1	BmnHodo	Hodo_for_run8_v1		2024-05-02	aleksand	Hodo_for_run8_with_box_Zpos_970.2cm_Xshift_64.90cm_Yshift_-1.0cm_rotationY_1.6deg_v1.root	✗
MAGNET	1	FairMagnet	magnet_modified		2024-04-19	aleksand	magnet_modified.root	✗
NDET	1	BmnNdet	nDet_VETO_slice_rotY_-27.30	 <div data-bbox="699 968 776 1031" style="border: 1px solid black; padding: 2px; font-size: 8px;">1 0 0 0 0 1 0 0 0 0 1 124.5</div>	2024-05-02	aleksand	nDet_NEW_NUMBERING_VETO_25mm_5slices_PLA_2mm_Pb_8mm_9slices_Cu_30mm_Sc_25mm_G10_2mm_Air_no_hole_ZdistDET_1_5_95.617cm_rotY_-27.30deg_rotX_0.0deg.root	✗

Transformation Matrix

From create_rootgeom_MAGNET.C:
top->AddNode(MagnetContainerV, 0, new TGeoTranslation(XMagnetPos, YMagnetPos, ZMagnetPos));

Create/Edit setup module

BM@N Geometry DataBase

Menu

- HOME
- VIEW GEOMETRY
- EDIT GEOMETRY
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 - EDIT_GEOMETRY_FILES
 - EDIT_MODULES
 - EDIT_MATERIALS
 - EDIT_MAGNETIC_FIELDS

Get in touch

✉ Konstantin Gertsenberger

BM@N Geometry DataBase

User: aleksand [CONFIGURE USER ACCESS](#) [LOGOUT](#)

Setup Module Tag*

Description*

Module*
MAGNET

Parent Module
Select Parent Module

File with the Module*
 magnet_modified

Transformation:

r11: 1	r12: 0	r13: 0
r21: 0	r22: 1	r23: 0
r31: 0	r32: 0	r33: 1

Translation:

X: 0	Y: 0	Z: 124,5
------	------	----------

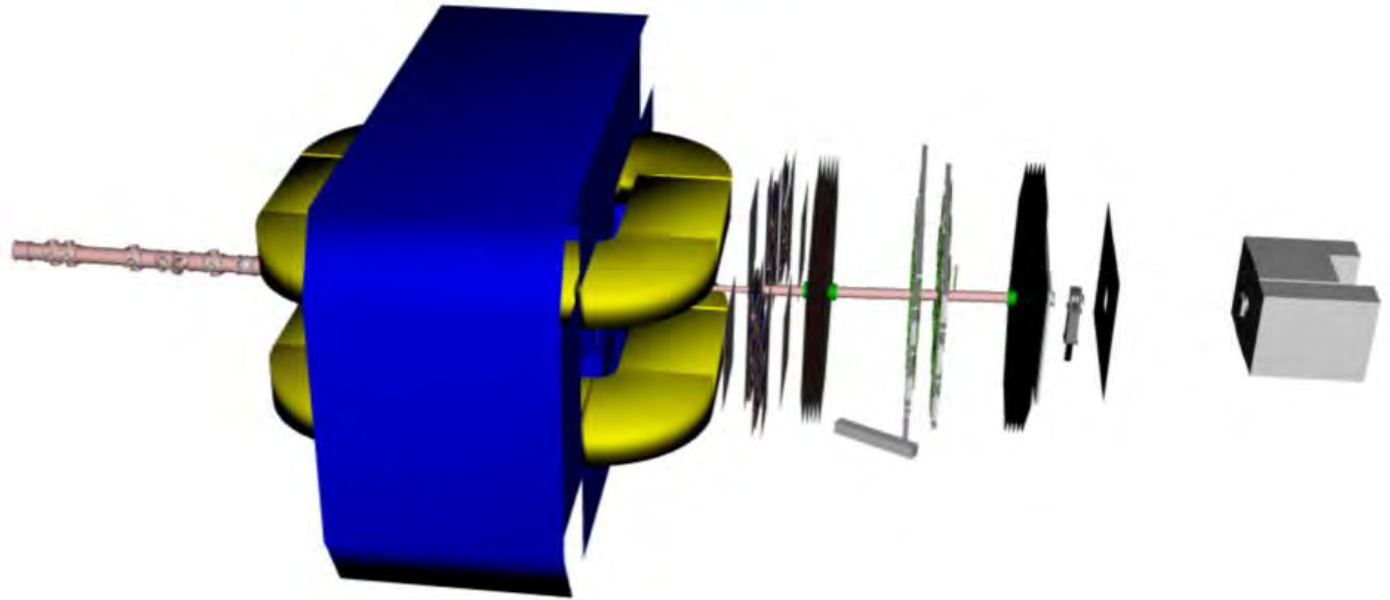
Parameter File:
[Choose ROOT file](#)
No file chosen

[ADD A NEW SETUP MODULE](#) [CANCEL](#)

Geometry of Run8

Navigation

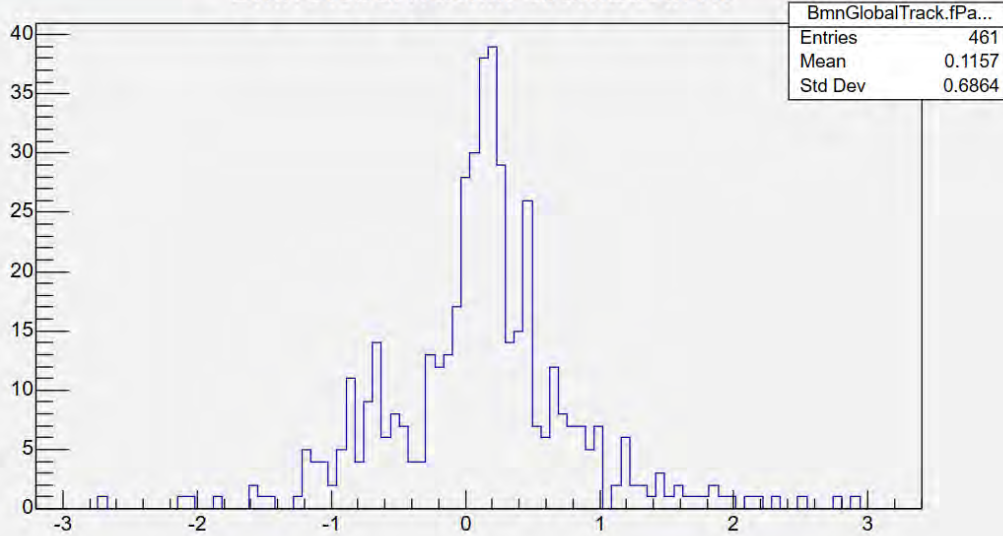
GL drawing



CheckOverlaps error still exist!

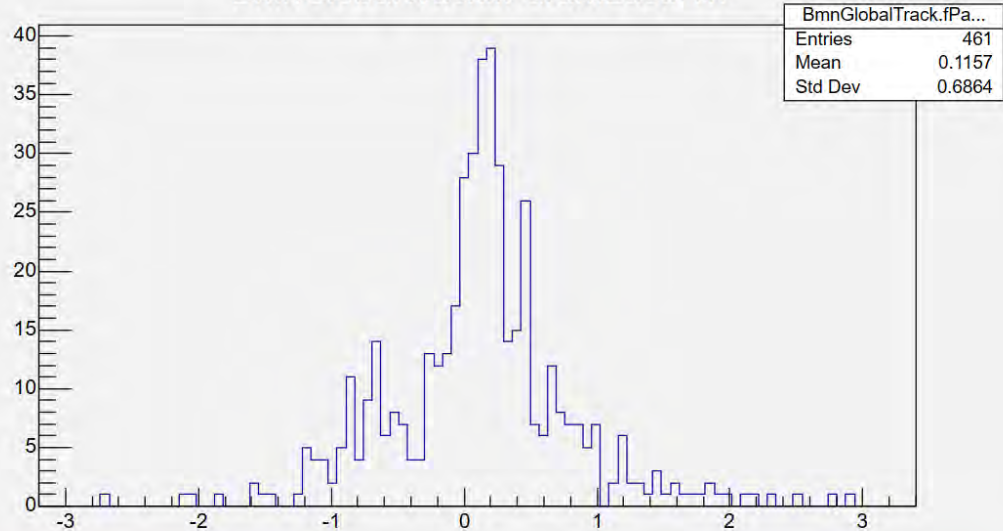
Verification geometry of Run8

BmnGlobalTrack.fParamLast.fTx



Run: 8
Revision: dev_28.04.2023
Use DB: YES

BmnGlobalTrack.fParamLast.fTx



Run: 8
Revision: Dev
Use DB: NO

Identical

Examples of using

- Change run_sim_bmn.C

```
//geometry(fRun); // load BM@N geometry
```

```
GeoSetup* gSetup = GeoSetup::Instance();
```

```
gSetup->loadSetupToFairRunSim("Run8");
```

Get/load magnetic field data for BmnFieldMap

```
FairField* sField = gSetup->getMagneticField(scale);
```

```
fRun->SetField(sField);
```

OR

```
const char* pathToMagnetField= gSetup->getMagneticFieldPath();
```

- Get Parameter file

// at the moment it is only possible to get the full path to the file, because there is no general use case

```
gSetup->getParFilePath("csc");
```

Next steps

- **User GUID**
- **Implement** REST API service for communication with the Geometry Database