



6th Collaboration Meeting of the BM@N Experiment at the NICA Facility

Status of information services for the BM@N experiment

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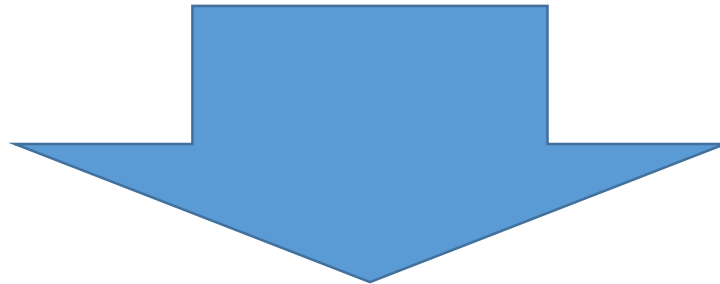
26.10.2020

Nuclotron-based Ion Collider fAility



Resources of information about the BM@N - 2019

- mpd.jinr.ru – NICA experiments website
- bmnshift.jinr.ru – first document server for BM@N
- bmn.jinr.ru/experiments – first collaboration website



BMN.JINR.RU

Main website with links to all BM@N resources

Migration for centralized access to BM@N information and services

- bmn.jinr.ru – main website and links to all resources
- But many web services required their own domains:
- bmn-wiki.jinr.ru – documentation service
 - bmn-ipa.jinr.ru – Identity and Authentication service
 - bmn-elog.jinr.ru – Online Electronic Logbook
 - bmn-forum.jinr.ru – collaboration forum
 - bmn-tango.jinr.ru – Slow Control Interface
 - bmn-web.jinr.ru – BM@N Experiment Database
 - bmn-scheduler.jinr.ru – NICA Scheduler Configurator
 - git.jinr.ru/nica/bmnroot – BM@N software repositories

[BmnRoot](#)[Databases](#)[HowTo](#)[References](#)[BM@N Registration](#)[BmnRoot Installation](#)[BmnRoot Start Guide](#)[How to use GIT](#)

1st experiment of the NICA project

Official BM@N collaboration web-site

[NICA web-site](#)[BM@N Project](#)

git

BmnRoot code

BmnRoot GitLab repository

[BmnRoot](#)

Unified Database

BM@N Offline Database

[BM@N DB](#)

ReadMe first

BmnRoot Start Guide

[Open Guide](#)

Website –
bmn.jinr.ru

Platform – WordPress

Architecture –
PHP + MySQL + WP Plugins

Apache with SSL

```
sudo su
yum install subversion git make cmake gcc-gfortran gcc-c++ binutils file patch redhat-lsb-core libX11-devel libXmu-devel libXpm-devel libXft-devel
libXext-devel mesa-libGLU-devel python-devel libxml2-devel expat-devel zlib-devel postgresql-devel mysql-devel openssl-devel curl-devel
automake libtool fftw3-devel
```

- Install packages needed for Debian-based OS (eg, Ubuntu):

```
sudo su
apt-get install subversion git make cmake g++ gcc gfortran binutils patch lsb-release libx11-dev libxmu-dev libxpm-dev libxft-dev libxext-dev dpkg-
dev xlibmesa-glu-dev libglew-dev python-dev libxml2-dev libexpat1-dev zlib1g-dev libpqxx-dev libmysqlclient-dev libssl-dev libcurl4-openssl-dev
automake libtool fftw3-dev
```

Installing the external packages

1. **Set an installation path for the external packages**, e.g. `/opt`

NOTE: If you are installing FairSoft/FairRoot to a system directory like `/opt`, then switch user to superuser 'root' ("sudo su" command).

```
export INSTALLATION_PATH=/opt
cd $INSTALLATION_PATH
```

2. **Install the FairSoft package**

The June 2019 release of FairSoft can be downloaded from GitHub:

```
git clone https://github.com/FairRootGroup/FairSoft.git fairsoft
cd fairsoft
git checkout jun19p1
```

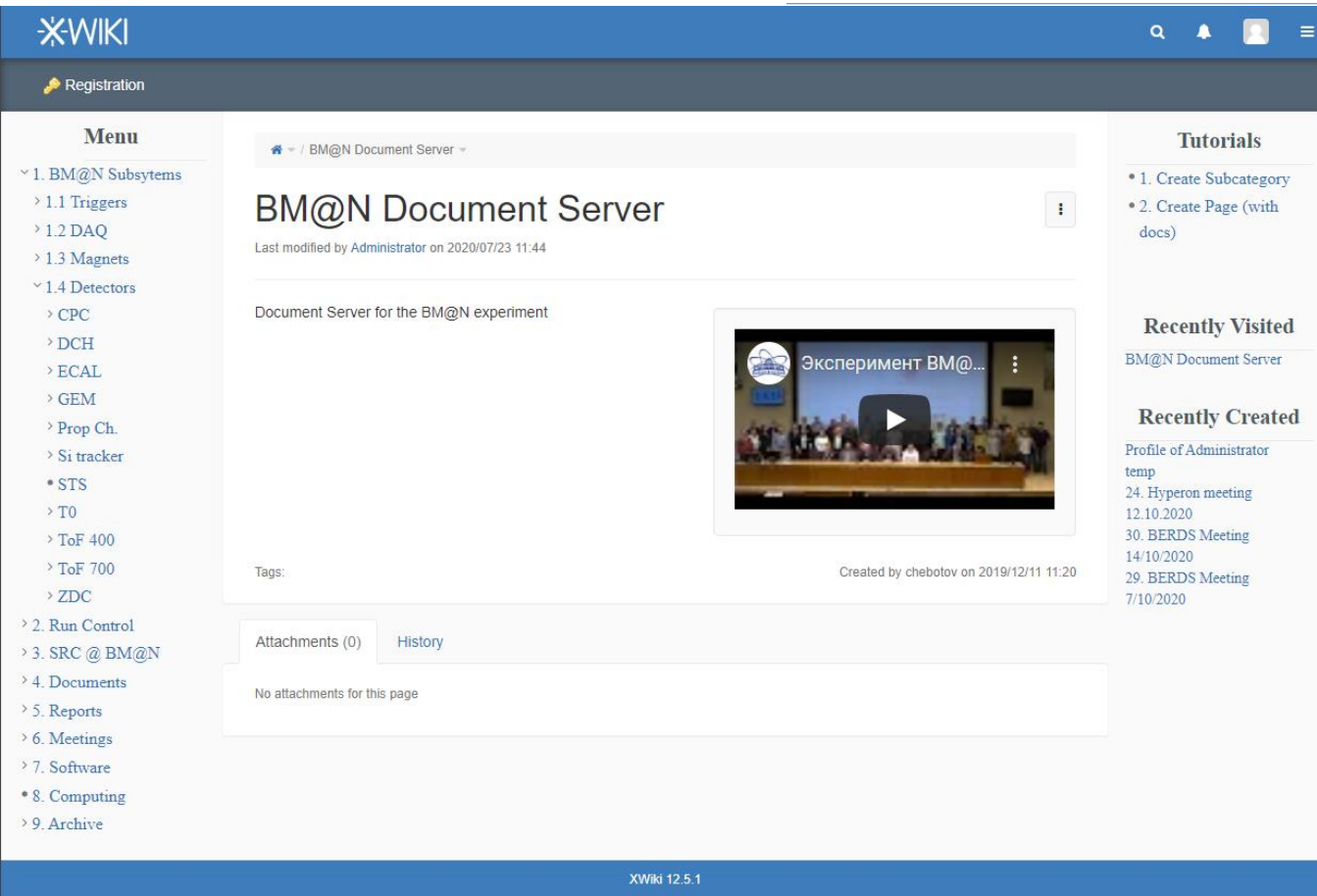
Apply patch (to add the last ROOT functions concerned with PostgreSQL databases):

```
wget http://nc13.jinr.ru/data/fairsoft_jun19p1.patch
patch -p1 -i fairsoft_jun19p1.patch
```

Information about:

- Collaboration
- Physics
- Detectors
- Software
- Computing
- Web Services

Example: HowTo page



The screenshot shows the XWiki interface for the 'BM@N Document Server' page. The page title is 'BM@N Document Server' and it was last modified by 'Administrator' on 2020/07/23 11:44. The content area features a video player with the title 'Эксперимент BM@N...' and a description 'Document Server for the BM@N experiment'. The video was created by 'chebotov' on 2019/12/11 11:20. The left sidebar contains a 'Menu' with a tree structure of categories and subcategories. The right sidebar contains 'Tutorials', 'Recently Visited', and 'Recently Created' sections. The bottom of the page shows the XWiki version '12.5.1'.

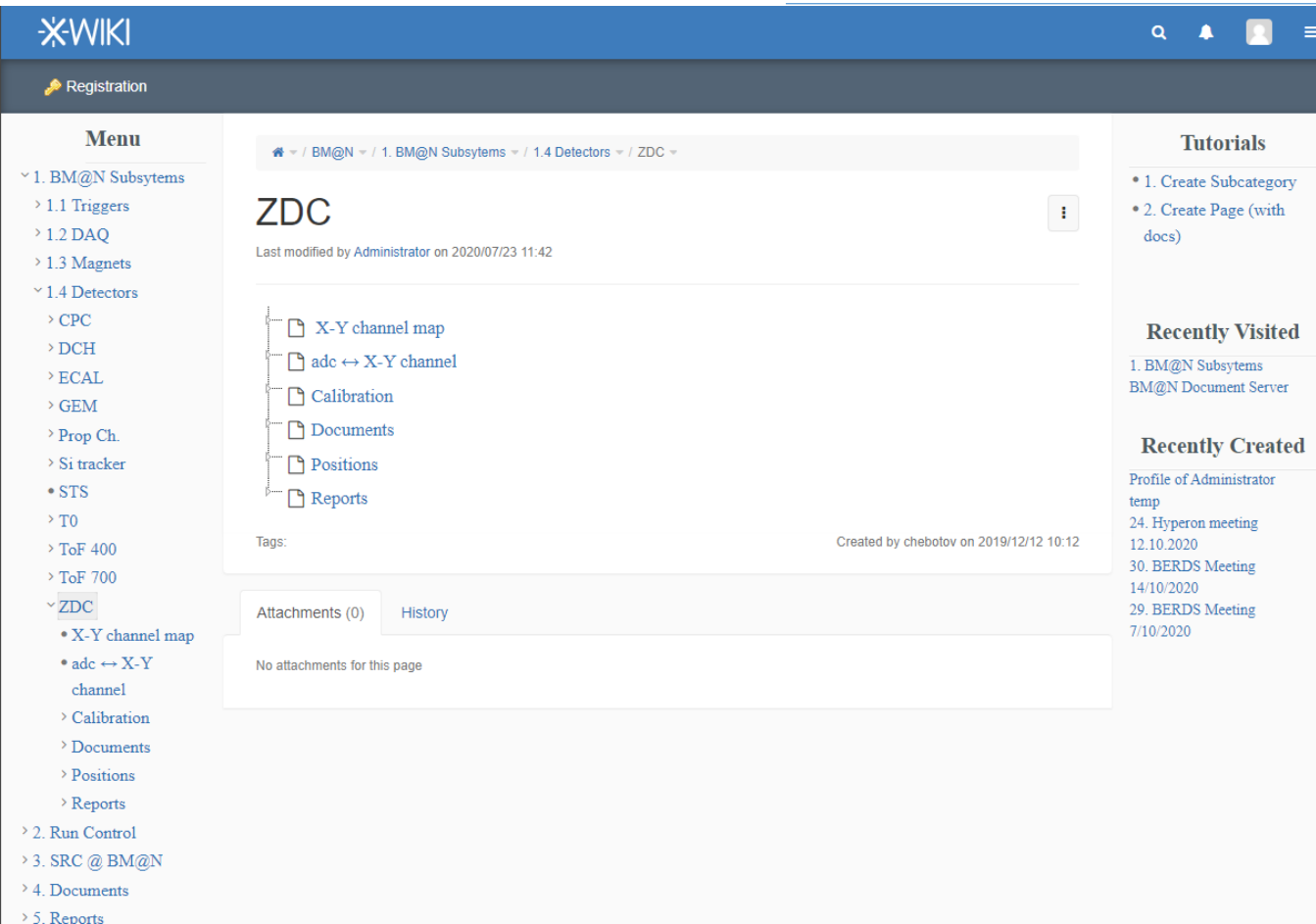
Website –
bmn-wiki.jinr.ru

Platform – Xwiki

Architecture –
Docker containers:

Xwiki + MySQL

Apache Reverse Proxy with
SSL to Docker local port

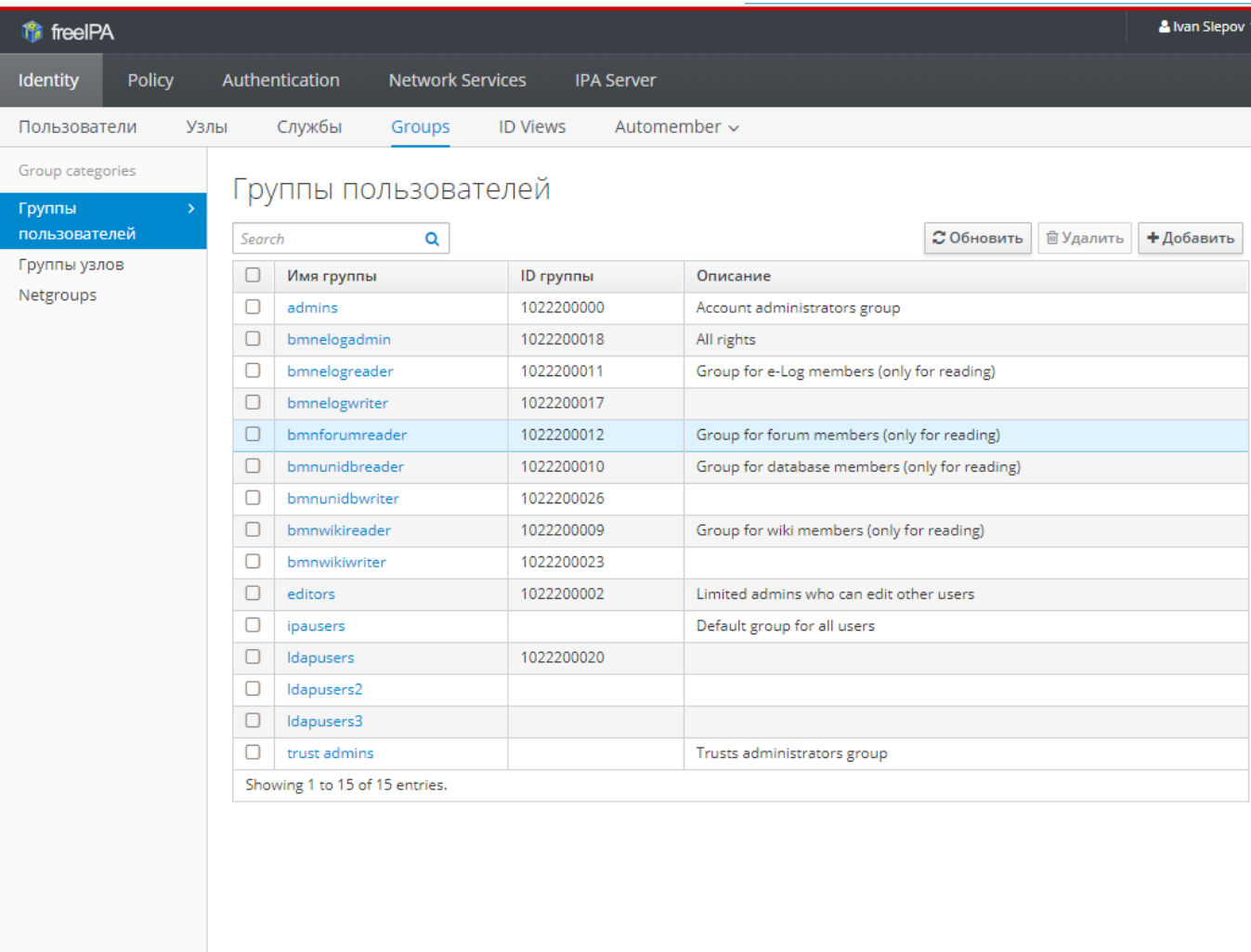


The screenshot shows the BM@N Wiki documentation service interface. The top navigation bar is blue with the 'WIKI' logo and search, notification, and user icons. Below the navigation bar is a dark grey bar with a 'Registration' link. The main content area is divided into three columns. The left column contains a 'Menu' with a tree structure of categories: 1. BM@N Subsystems (with sub-items 1.1 Triggers, 1.2 DAQ, 1.3 Magnets, 1.4 Detectors), 2. Run Control, 3. SRC @ BM@N, 4. Documents, and 5. Reports. The middle column displays the 'ZDC' page, which includes a breadcrumb trail, a title 'ZDC', a modification date, a list of sub-items (X-Y channel map, adc ↔ X-Y channel, Calibration, Documents, Positions, Reports), a 'Tags' section, and an 'Attachments (0)' section. The right column contains 'Tutorials' (1. Create Subcategory, 2. Create Page (with docs)), 'Recently Visited' (1. BM@N Subsystems, BM@N Document Server), and 'Recently Created' (Profile of Administrator, temp, 24. Hyperon meeting, 12.10.2020, 30. BERDS Meeting, 14/10/2020, 29. BERDS Meeting, 7/10/2020).

Documents about:

- BM@N Subsystems
- Run Control
- SRC for BM@N
- Comon documents
- Reports
- Software
- Computing
- Archive

Example: ZDC detector page



freelPA Ivan Stegov

Identity Policy Authentication Network Services IPA Server

Пользователи Узлы Службы Groups ID Views Automember

Group categories

Группы пользователей

Группы узлов

Netgroups

Группы пользователей

Search

Обновить Удалить Добавить

<input type="checkbox"/>	Имя группы	ID группы	Описание
<input type="checkbox"/>	admins	1022200000	Account administrators group
<input type="checkbox"/>	bmnelogadmin	1022200018	All rights
<input type="checkbox"/>	bmnelogreader	1022200011	Group for e-Log members (only for reading)
<input type="checkbox"/>	bmnelogwriter	1022200017	
<input type="checkbox"/>	bmforumreader	1022200012	Group for forum members (only for reading)
<input type="checkbox"/>	bmunidbreader	1022200010	Group for database members (only for reading)
<input type="checkbox"/>	bmunidbwriter	1022200026	
<input type="checkbox"/>	bmwikireader	1022200009	Group for wiki members (only for reading)
<input type="checkbox"/>	bmwikiwriter	1022200023	
<input type="checkbox"/>	editors	1022200002	Limited admins who can edit other users
<input type="checkbox"/>	ipausers		Default group for all users
<input type="checkbox"/>	ldapusers	1022200020	
<input type="checkbox"/>	ldapusers2		
<input type="checkbox"/>	ldapusers3		
<input type="checkbox"/>	trust admins		Trusts administrators group

Showing 1 to 15 of 15 entries.

Website –
bm-n-ipa.jinr.ru

Platform – FreeIPA

Stand-alone server for it

Architecture –
bind + sssd + krb5 +
apache with SSL



Registration or User rights

 Your first name

 Your last name

 Login

 Email

If you have not registered for BM@N collaboration, please fill and attach this signed form

 Attach signed form

REGISTRATION

Already registered



Resource Access Request
Web page –
bm.jinr.ru/registration/

The required fields are filled in and the request is sent by e-mail to the resource manager

It is impossible to register yourself on the resources only by sending this request


You must specify the mail, select resources and specify the necessary rights




Online Electronic Logbook



BM@N e-Log

 Login

 Password

LOGIN

[Request BM@N IPA account →](#)



[FreeIPA cabinet →](#)

Website –
bm-n-ellog.jinr.ru

Platform – self-written

Architecture –
PHP + PostgreSQL

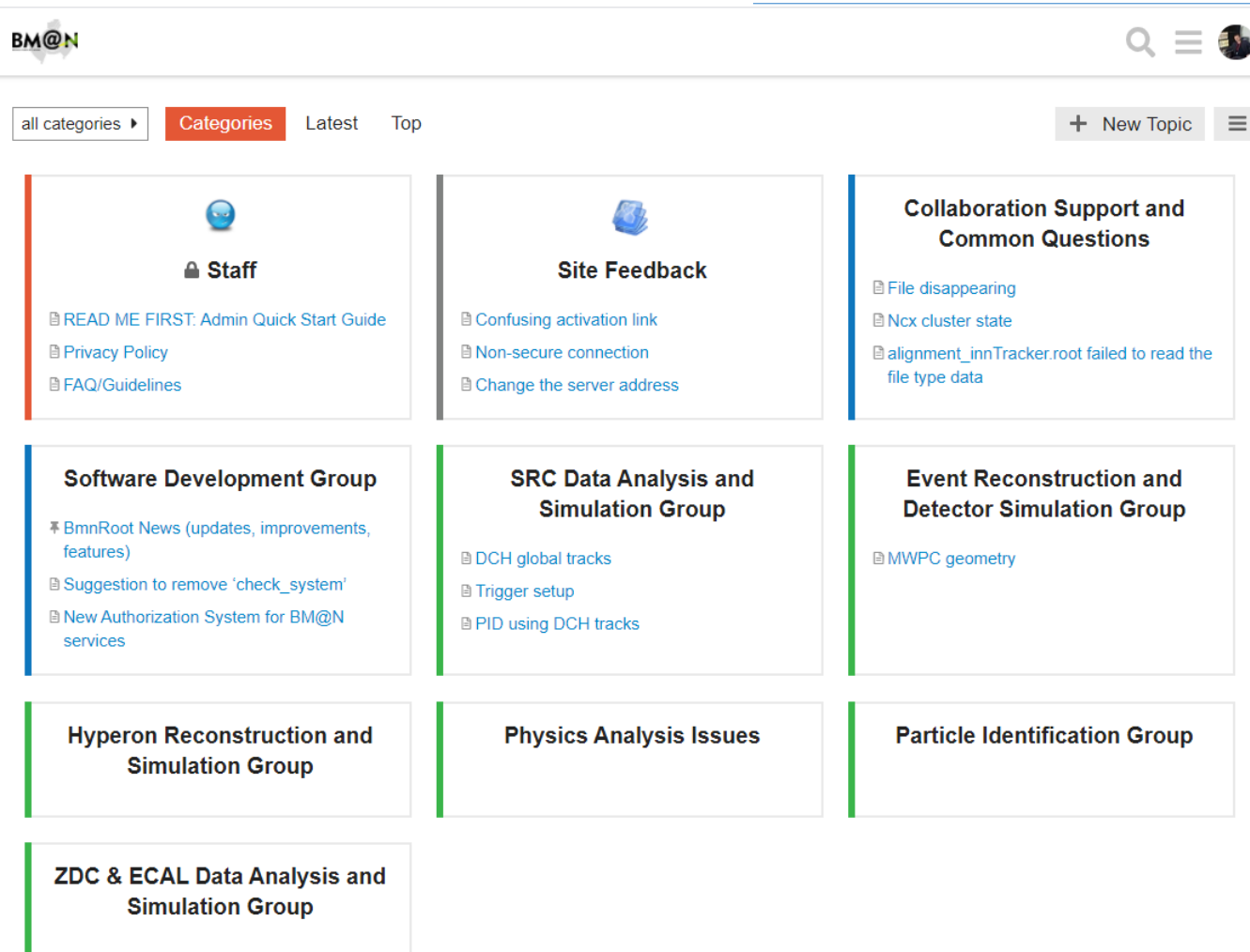
Apache with SSL

Date	Shift Leader	Type	No Run	Trigger	DAQ Status	SP-41, A	SP-57, A	VKM2, A	Beam	Energy, GeV	Target	Comment
2018-04-05 11:47:06	Rumyantsev	Inform All	5185 per.7	Special Trigger	All	0	0	0	Kr	2.94	Cu (2 mm)	End of the RUN7
2018-04-05 11:09:20	Rumyantsev	New Run	5184 per.7	Beam Trigger + Si >3	All	1250	50	125	Kr	2.94	Cu (2 mm)	Cu target; Tr= BC1 & BC2 & VC & Si>3 VKM2: I=125A, SP-57=50A, SP41=1250A; 100 k
2018-04-05 08:12:35	Rumyantsev	New Run	5183 per.7	Beam Trigger + Si >3	All	1250	50	125	Kr	2.94	Cu (2 mm)	Cu target; Tr= BC1 & BC2 & VC & Si>2 VKM2: I=125A, SP-57=50A, SP41=1250A; 120 k
2018-04-05 07:46:35	Babkin	New Run	5182 per.7	Beam Trigger + Si >3	All	1250	50	125	Kr	2.94	Cu (2 mm)	Cu target; Tr= BC1 & BC2 & VC & Si>3 VKM2: I=125A, SP-57=50A, SP41=1250A; 208 kev
2018-04-05 07:41:29	Babkin	New Run	5180 per.7	Beam Trigger + Si >3	All	1250	50	125	Kr	2.94	Cu (2 mm)	Cu target; Tr= BC1 & BC2 & VC & Si>3; VKM2: I=125A, SP-57=50A, SP41=1250A; 201 kev
2018-04-05 07:25:08	Babkin	New Run	5179 per.7	Beam Trigger + Si >3	All	1250	50	125	Kr	2.94	Cu (2 mm)	Cu target; Tr= BC1 & BC2 & VC & Si>3; VKM2: I=125A, SP-57=50A, SP41=1250A; 201 kev
2018-04-05 06:01:07	Babkin	New Run	5178 per.7	Beam Trigger + Si >3	All	1250	50	125	Kr	2.94	Cu (2 mm)	Cu target; Tr= BC1 & BC2 & VC & Si>3; VKM2: I=125A, SP-57=50A, SP41=1250A; 201 kev
2018-04-05 05:27:39	Babkin	New Run	5177 per.7	Beam Trigger + Si >3	All	1250	50	125	Kr	2.94	Cu (2 mm)	Cu target; Tr= BC1 & BC2 & VC & Si>3; VKM2: I=125A, SP-57=50A, SP41=1250A; 204 kev
2018-04-05 05:27:06	Babkin	New Run	5176 per.7	Beam Trigger + BD>3	All	1250	50	125	Kr	2.94	Cu (2 mm)	Cu target; Tr= BC1 & BC2 & VC & BD>3; VKM2: I=125A, SP-57=50A, SP41=1250A; 150 kev
2018-04-05 04:47:27	Babkin	New Run	5174 per.7	Beam Trigger + BD>3	All	1250	50	125	Kr	2.94	Cu (2 mm)	Cu target; Tr= BC1 & BC2 & VC & BD>3; VKM2: I=125A, SP-57=50A, SP41=1250A; 213 kev

Information about runs:

- Date
- Shift Leader
- Type of record
- Number of run
- Trigger
- DAQ status
- SP-41
- SP-57
- VKM2
- Beam
- Energy
- Target
- Comments

Example: last runs



The screenshot shows the BM@N Collaboration forum interface. At the top, there is a search bar, a menu icon, and a user profile icon. Below the header, there are navigation links: "all categories", "Categories" (highlighted in red), "Latest", and "Top". A "New Topic" button is also visible. The forum is organized into a grid of categories, each with a title, an icon, and a list of topics.

Category	Topics
Staff	<ul style="list-style-type: none"> READ ME FIRST: Admin Quick Start Guide Privacy Policy FAQ/Guidelines
Site Feedback	<ul style="list-style-type: none"> Confusing activation link Non-secure connection Change the server address
Collaboration Support and Common Questions	<ul style="list-style-type: none"> File disappearing Ncx cluster state alignment_innTracker.root failed to read the file type data
Software Development Group	<ul style="list-style-type: none"> BmnRoot News (updates, improvements, features) Suggestion to remove 'check_system' New Authorization System for BM@N services
SRC Data Analysis and Simulation Group	<ul style="list-style-type: none"> DCH global tracks Trigger setup PID using DCH tracks
Event Reconstruction and Detector Simulation Group	<ul style="list-style-type: none"> MWPC geometry
Hyperon Reconstruction and Simulation Group	
Physics Analysis Issues	
Particle Identification Group	
ZDC & ECAL Data Analysis and Simulation Group	


Website –
bmn-forum.jinr.ru

Platform – Discourse

Architecture –
Docker containers with
own launcher

Redis + sidekiq + Discourse
Nginx + PostgreSQL

Apache Reverse Proxy with
SSL to Docker container

Suggestion to remove 'check_system'	P M G	6	20	Apr 10
New Authorization System for BM@N services	G	0	15	Feb 6
Problem with ELog DB access	P G	2	11	Feb 3
BmnRoot News (updates, improvements, features)	G	2	17	Jan 24
Crash run_reco_src after last update	M M G	5	10	Dec '19
BmnEventQuality object for the trigger test task	M	0	8	Nov '19
Src sim-reco crashes	M G	5	11	Oct '19
Push to remote origin	T G	5	13	Oct '19
Changes for the first BmnRoot release	G	2	16	Oct '19
Data base connection error	M  G	2	11	Oct '19
Geometry overlaps	M G	7	15	Sep '19
Access eventID from the output tree	M P G	6	17	Aug '19
Different number of events in the *digi.root and *raw.root files	M P G	4	35	Jul '19
Software Group category	G	0	27	Jul '19

Forum groups:

- News
- Support
- Software development
- Event reconstruction
- Particle Identification
- Data Analysis and Simulation
- Hyperon Reconstruction and Simulation
- SRC Data Analysis and Simulation
- Physics Analysis Issues

Example: software group page

BM@N slow controls viewer

Run selection

Selected run info

Period number: 7

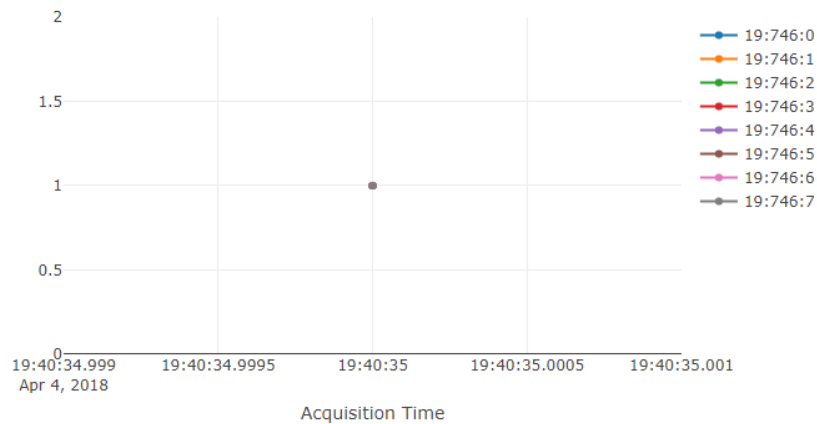
Run number: 5158

Start time: 2018-04-04 19:32:02

End time: 2018-04-04 19:42:36



bm-daq-ups-inputphase



Website –
bm-n-tango.jinr.ru

Platform – self-written

Architecture –
Docker containers with
own launcher

Python + PostgreSQL

Apache Reverse Proxy with
SSL to Docker container

Menu Sign Out

BM@N Experiment Runs

Run Selector : *Period 6;* + ✎ -

Period	Run	Start Time	End Time	Beam	Energy, GeV	Target	Voltage, mV	Event Count	File Size, GB	Raw File Path	Geometry
6	1992	2017-03-18 23:55:33	2017-03-19 00:13:31	C	5.14	C	74.493333	57737	5.481	/eos/nica/bmn/exp/raw/run6/mpd_run_Glob_1992	≡
6	1991	2017-03-18 23:33:48	2017-03-18 23:49:54	C	5.14	C	76.112108	65368	6.170	/eos/nica/bmn/exp/raw/run6/mpd_run_Glob_1991	≡
6	1990	2017-03-18 23:31:00	2017-03-18 23:31:59	C	5.14	C	76.107547	6607	0.618	/eos/nica/bmn/exp/raw/run6/mpd_run_Glob_1990	≡
6	1989	2017-03-18 23:26:47	2017-03-18 23:30:20	C	5.14	C	76.102794	29085	2.727	/eos/nica/bmn/exp/raw/run6/mpd_run_Glob_1989	≡
6	1988	2017-03-18 22:58:22	2017-03-18 23:07:12	C	5.14	C	76.110363	41893	3.940	/eos/nica/bmn/exp/raw/run6/mpd_run_Glob_1988	≡
6	1987	2017-03-18 22:44:02	2017-03-18 22:56:36	C	5.14	C	76.085479	79187	7.429	/eos/nica/bmn/exp/raw/run6/mpd_run_Glob_1987	≡
6	1986	2017-03-18 22:40:21	2017-03-18 22:43:33	C	5.14	C	76.066589	24847	2.319	/eos/nica/bmn/exp/raw/run6/mpd_run_Glob_1986	≡
6	1985	2017-03-18 22:29:55	2017-03-18 22:38:35	C	5.14	C	76.075318	47324	4.434	/eos/nica/bmn/exp/raw/run6/mpd_run_Glob_1985	≡
6	1983	2017-03-18 22:21:51	2017-03-18 22:27:57	C	5.14	C	76.048702	53616	5.010	/eos/nica/bmn/exp/raw/run6/mpd_run_Glob_1983	≡
6	1982	2017-03-18 16:56:23	2017-03-18 17:00:00	C	4.5	C	76.921612	5076	0.494	/eos/nica/bmn/exp/raw/run6/mpd_run_Glob_1982	≡
6	1981	2017-03-18 16:35:49	2017-03-18 16:56:01	C	4.5	C	76.948587	261080	24.644	/eos/nica/bmn/exp/raw/run6/mpd_run_Glob_1981	≡
6	1980	2017-03-18 16:21:09	2017-03-18 16:35:31	C	4.5	C	76.960804	208949	19.736	/eos/nica/bmn/exp/raw/run6/mpd_run_Glob_1980	≡
6	1979	2017-03-18 16:06:39	2017-03-18 16:20:51	C	4.5	C	76.996687	209341	19.769	/eos/nica/bmn/exp/raw/run6/mpd_run_Glob_1979	≡
6	1978	2017-03-18 15:54:32	2017-03-18 16:05:24	C	4.5	C	0.981394	112414	10.568	/eos/nica/bmn/exp/raw/run6/mpd_run_Glob_1978	≡
6	1976	2017-03-18 13:28:33	2017-03-18 13:47:16	C	4.5	C	76.056474	84310	7.983	/eos/nica/bmn/exp/raw/run6/mpd_run_Glob_1976	≡

Website –
bm-n-unidb.jinr.ru

Platform – Angular

Architecture –
Docker containers

Documentation

NICA-Scheduler Scheme Configurator

Load XML Scheme

No file loaded

Download XML Scheme

Global Job Scheme

+ Job

✗ [Job]: default

+ Macro

✗ [Macro]:

+ File

✗ [Job]: new job

+ Macro

✗ [Macro]:

+ File

Job Configuration

Name*

new job

Batch*

SGE

SGE

SLURM

TORQUE

Run Configuration

Mode*

local

CPU Count*

2

Configuration File Path

▼ Advanced Parameters

Queue

Priority

Log File Path

Website –
bm-n-scheduler.jinr.ru

Platform – self-written

Architecture –
HTML + JavaScript

- Using “Jenkins -> Portainer -> Docker “ for CI/CD
- Using Traefik for reverse proxy instead Apache

- The services reviewed are constantly evolving, so stay tuned for the main website and collaboration forum
- The current web services architecture is completely fine with us
- We try to keep up to date and use the latest software technologies for the development of BM@N collaboration services

Thank you for your attention!