



5th Collaboration Meeting
of the BM@N Experiment at the NICA Facility

New architecture of the information services for BM@N

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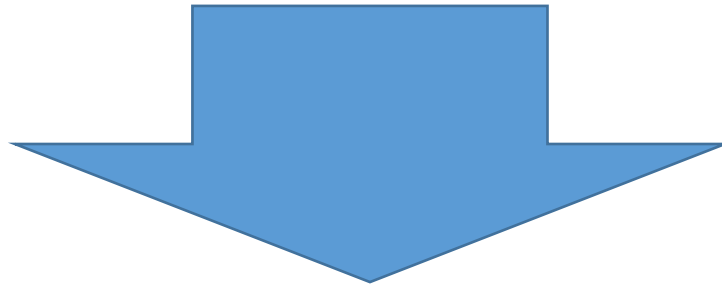
20.04.2020

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



Main collaboration website

The screenshot shows the BM@N collaboration website. At the top, there is a navigation bar with links: COLLABORATION, PHYSICS, DETECTOR, SOFTWARE, COMPUTING, WIKI, FORUM, and VIDYO. The COLLABORATION menu is open, showing a list of links: Documents, Structure, Meetings, Mailing Lists, and Contacts. The Structure link is further expanded, showing a list of links: BM@N Management, Institutional Board, Executive Council, Detector Council, Institutions, and Member List. Below the navigation bar, there is a large banner with the text "1st experiment of the NICA project" and "Official BM@N collaboration web-site". There are two buttons: "NICA web-site" and "BM@N Project". Below the banner, there is a 3D rendering of the NICA project structure. At the bottom, there are three circular icons: a git icon, a database icon, and a document icon. Below each icon is a section with a title and a button. The first section is titled "BmnRoot code" and contains the text "BmnRoot GitLab repository" and a button labeled "BmnRoot". The second section is titled "Unified Database" and contains the text "BM@N Offline Database" and a button labeled "BM@N DB". The third section is titled "ReadMe first" and contains the text "BmnRoot Start Guide" and a button labeled "Open Guide".

COLLABORATION ▾ PHYSICS ▾ DETECTOR ▾ SOFTWARE ▾ COMPUTING ▾ WIKI FORUM VIDYO

- Documents ▾
- Structure ▾
 - BM@N Management
 - Institutional Board
 - Executive Council
 - Detector Council
 - Institutions
 - Member List
- Meetings ▾
- Mailing Lists
- Contacts

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

Server –
159.93.63.29

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://se51-98.jinr.ru/data/fairsoft_jun19p1.patch
patch -p1 -i fairsoft_jun19p1.patch
```

Installing fairsoft: follow the instructions on the screen. You can use options suggested below.

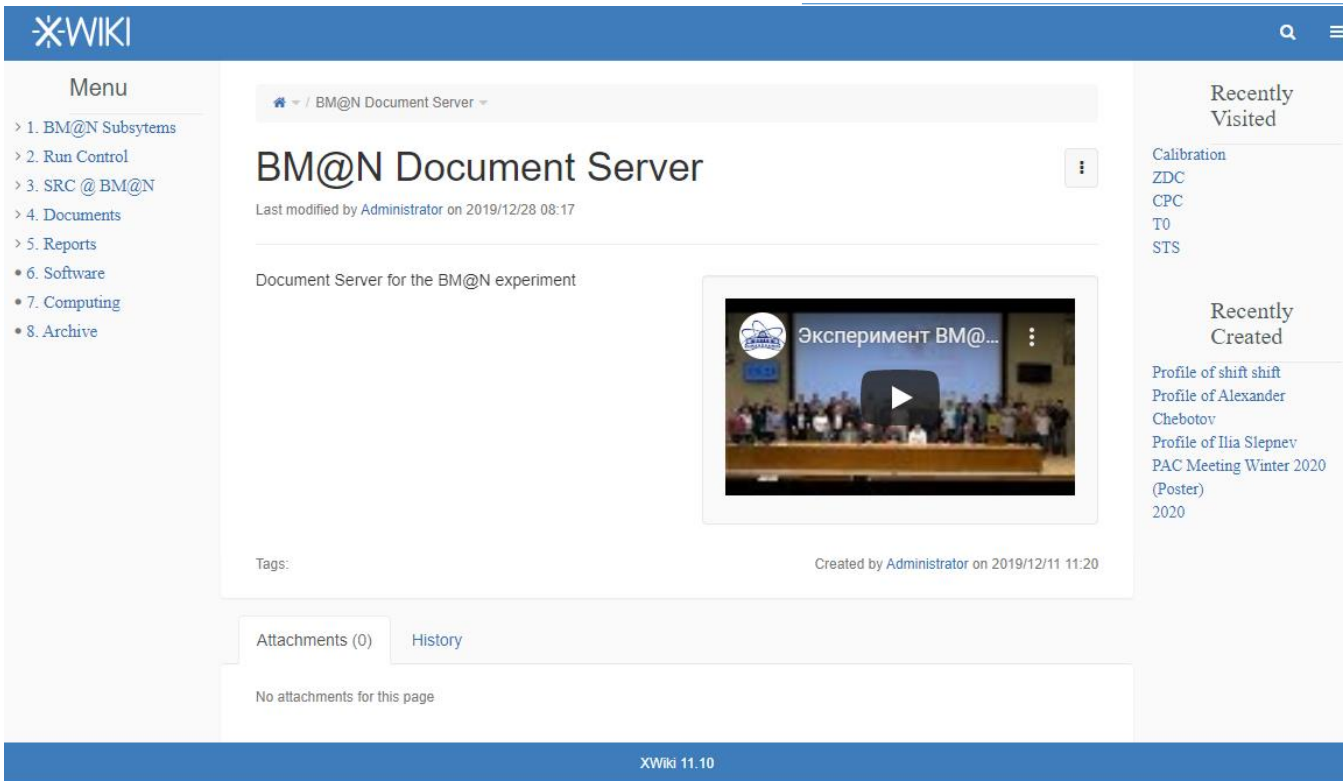
```
./configure.sh
# 1) GCC (on Linux)
# 1) No Debug Info
# 2) No (not install FairMQ Only)
# 1) Yes (install Simulation engines and event generators)
# 2) Internet (install G4 files from internet)
# 2) No (not compile Geant4 in multithreaded mode)
# 2) No (not install the python bindings)
# path: $INSTALLATION_PATH/fairsoft/install
```

3. Install the FairRoot environment

Information about:

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

Example: HowTo page



The screenshot shows the XWiki interface for the 'BM@N Document Server'. The top navigation bar is blue with the XWiki logo and a search icon. A left sidebar contains a 'Menu' with links to various sections like 'BM@N Subsystems', 'Run Control', 'SRC @ BM@N', 'Documents', 'Reports', 'Software', 'Computing', and 'Archive'. The main content area displays the title 'BM@N Document Server', a description 'Document Server for the BM@N experiment', and a video thumbnail titled 'Эксперимент BM@N...'. Below the video, there are tabs for 'Attachments (0)' and 'History', with a message stating 'No attachments for this page'. A right sidebar lists 'Recently Visited' pages (Calibration, ZDC, CPC, T0, STS) and 'Recently Created' pages (Profile of shift shift, Profile of Alexander Chebotov, Profile of Ilia Slepnev, PAC Meeting Winter 2020 (Poster), 2020). The footer of the page indicates 'XWiki 11.10'.

Website –
bmn-wiki.jinr.ru

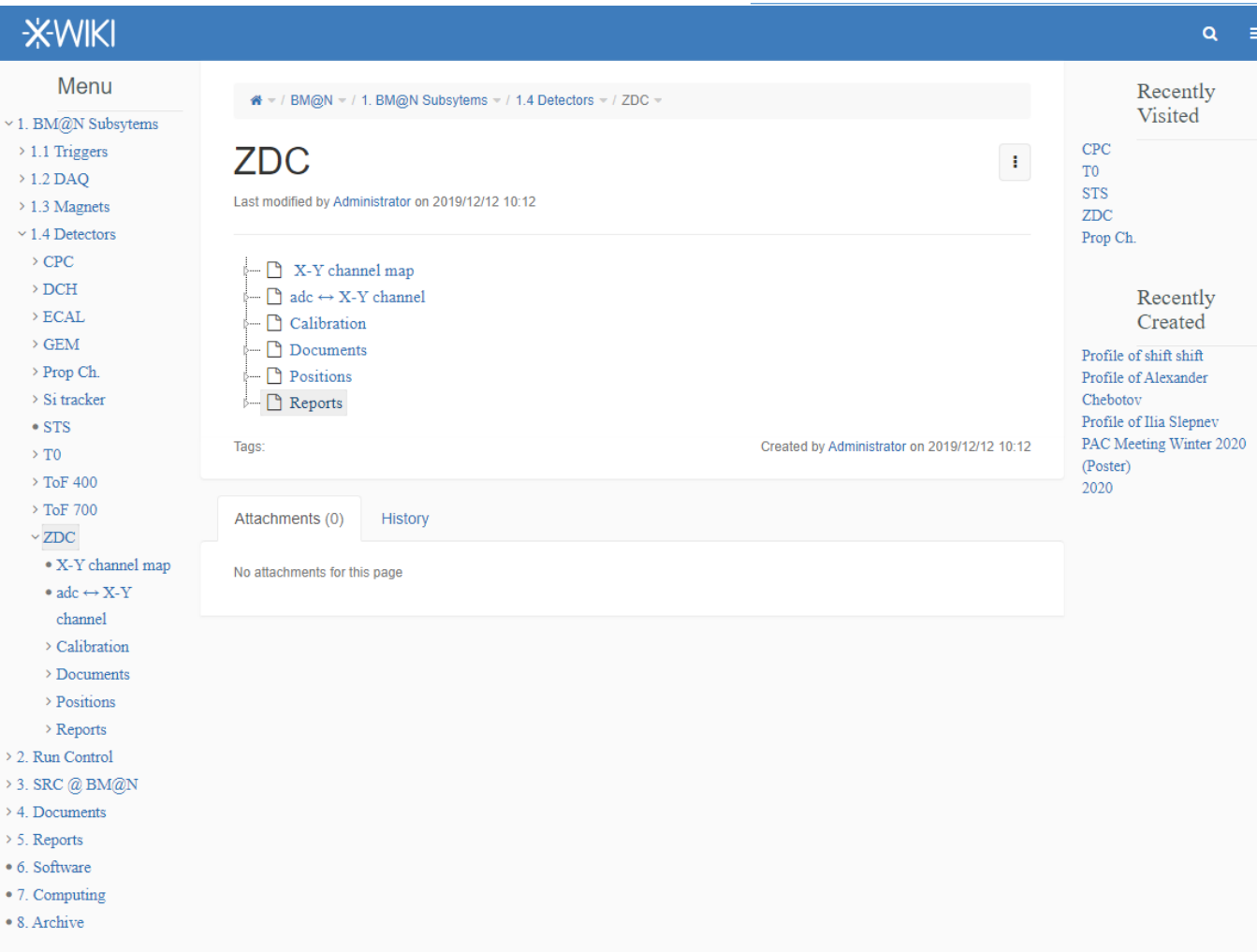
Platform – Xwiki

Architecture –
Docker containers:

Xwiki + MySQL

Apache Reverse Proxy with
SSL to Docker local port

Server –
159.93.63.29

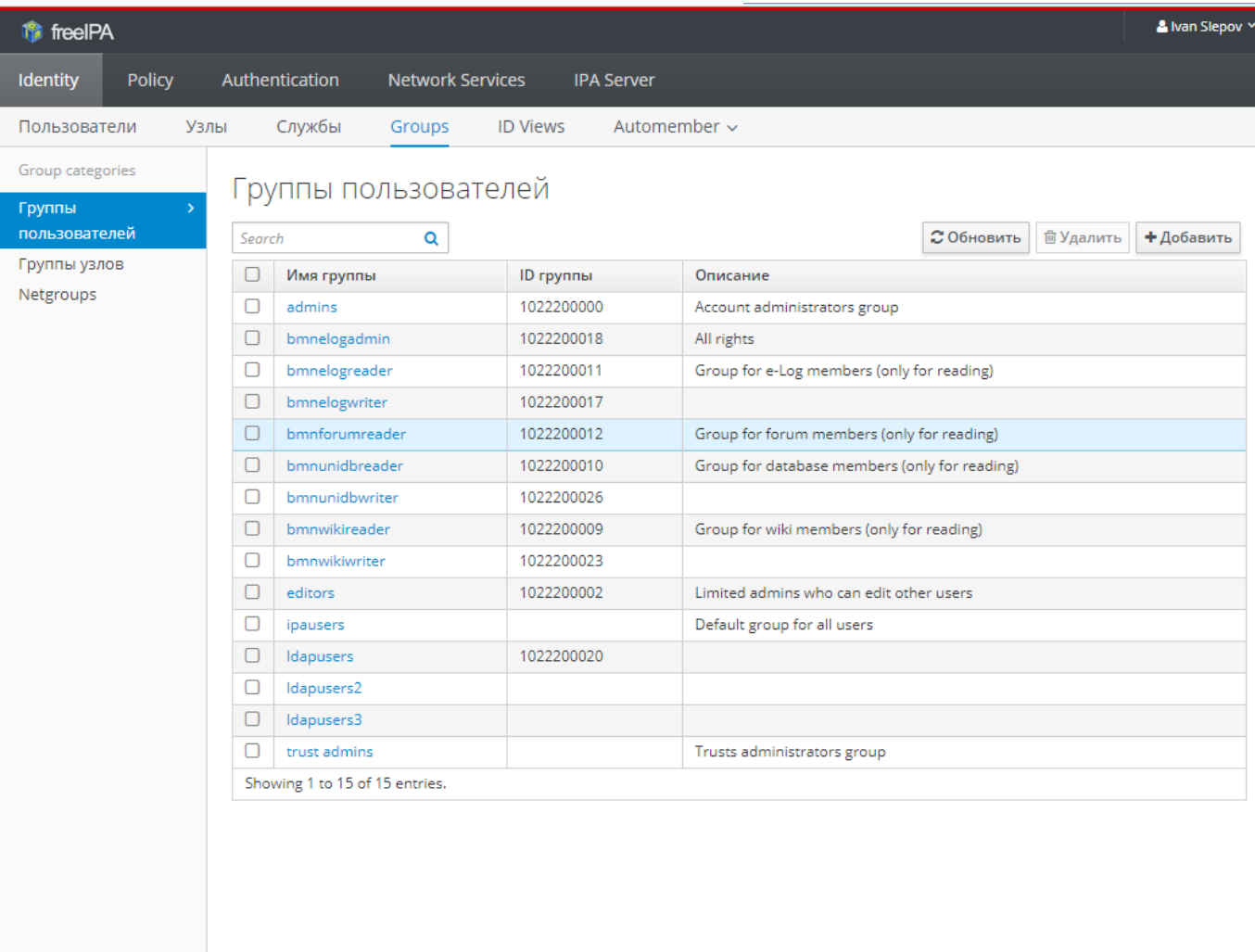


The screenshot shows the BM@N Wiki interface. The top navigation bar includes the Wiki logo, a search icon, and a menu icon. The left sidebar contains a hierarchical menu with categories like '1. BM@N Subsystems', '2. Run Control', '3. SRC @ BM@N', '4. Documents', '5. Reports', '6. Software', '7. Computing', and '8. Archive'. The main content area displays the 'ZDC' page, which was last modified by Administrator on 2019/12/12 10:12. The page content includes a tree view of subpages: 'X-Y channel map', 'adc ↔ X-Y channel', 'Calibration', 'Documents', 'Positions', and 'Reports'. Below the tree view, there are tabs for 'Attachments (0)' and 'History', and a message stating 'No attachments for this page'. The right sidebar shows 'Recently Visited' links (CPC, T0, STS, ZDC, Prop Ch.) and 'Recently Created' links (Profile of shift shift, Profile of Alexander Chebotov, Profile of Ilia Slepnev, PAC Meeting Winter 2020 (Poster), 2020).

Documents about:

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

Example: ZDC detector page



freelPA Ivan Slepov

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

Architecture –
bind + sssd + krb5 +
apache with SSL

Server –
159.93.63.23

Identity and Authentication service

Resource Access Request
Web page –
bmj.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



Registration or User rights

  Email

 Service



Describe rights you want to get

Request

Not registered yet







Online Electronic Logbook



BM@N e-Log

 Login

 Password

LOGIN

[Request BM@N IPA account →](#)



[FreeIPA cabinet →](#)

Website –
bmn-elog.jinr.ru

Platform – self-written

Architecture –
PHP + PostgreSQL

Apache with SSL

Server –
159.93.63.29

| 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



Staff

- READ ME FIRST: Admin Quick Start Guide
- Privacy Policy
- FAQ/Guidelines



Site Feedback

- Confusing activation link
- Non-secure connection
- Change the server address



Collaboration News

Collaboration Support and Common Questions

- Ncx cluster state
- alignment_innTracker.root failed to read the file type data
- Mpd22

Software Development and Data Quality Check Group

- BmnRoot News (updates, improvements, features)
- Suggestion to remove 'check_system'
- New Authorization System for BM@N services

Event Reconstruction and Detector Simulation Group

- MWPC geometry

Particle Identification Group

ZDC & ECAL Data Analysis and Simulation Group

Hyperon Reconstruction and Simulation Group

SRC Data Analysis and Simulation Group

- DCH global tracks
- Trigger setup
- PID using DCH tracks

Physics Analysis Issues

Website –
bmn-forum.jinr.ru





























Platform – Discourse

Architecture –
Docker containers with
own launcher

Redis + sidekiq + Discourse
Nginx + PostgreSQL

Apache Reverse Proxy with
SSL on Docker local port

Server –
159.93.63.29

| <div> <div>Software Development and Data Quality Check Group ▸</div> <div>Latest</div> </div> | | <div> <div>Edit</div> <div>New Topic</div> <div></div> </div> | | | |
|--|--|---|-------|----------|--|
| Topic | | Replies | Views | Activity | |
| <div> <div>🚩 BmnRoot News (updates, improvements, features)</div> <div>Please, use this topic to announce new significant features, improvements or updates in BmnRoot.</div> </div> |  | 2 | 16 | Jan 24 | |
| Suggestion to remove 'check_system' |    | 6 | 18 | 9d | |
| New Authorization System for BM@N services |  | 0 | 15 | Feb 6 | |
| 🔒 Problem with ELog DB access |   | 2 | 11 | Feb 3 | |
| 🔒 Crash run_reco_src after last update |    | 5 | 10 | Dec '19 | |
| BmnEventQuality object for the trigger test task |  | 0 | 8 | Nov '19 | |
| 🔒 Src sim-reco crashes |   | 5 | 10 | Oct '19 | |
| 🔒 Push to remote origin |   | 5 | 13 | Oct '19 | |
| 🔒 Changes for the first BmnRoot release |  | 2 | 16 | Oct '19 | |
| Data base conntection error |    | 2 | 11 | Oct '19 | |
| Geometry overlaps |   | 7 | 15 | Sep '19 | |
| 🔒 Access eventID from the output tree |    | 6 | 17 | Aug '19 | |
| 🔒 Different number of events in the *digi.root and *raw.root files |    | 4 | 35 | Jul '19 | |
| ★ Software Group category |  | 0 | 26 | 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

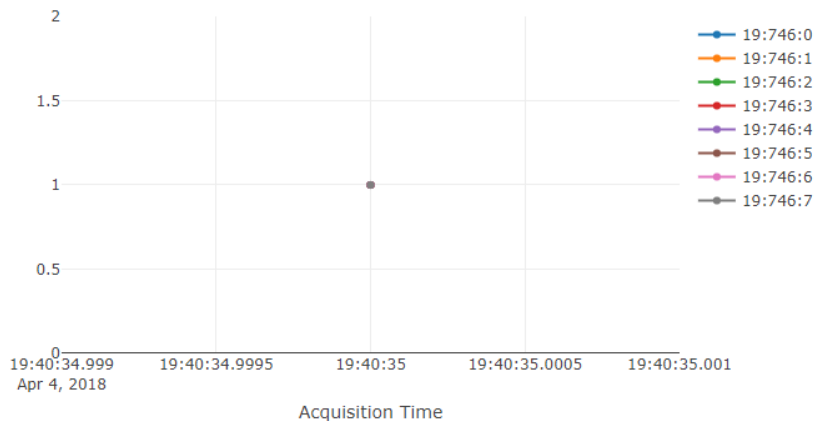
Run number: 5158

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

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



bmn-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 on Docker local port

Server –
159.93.63.29

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 20:55:33 | 2017-03-18 21:13:31 | C | 5.14 | C | 74.493333 | 57737 | 5.481 | /eos/nica/bmn/exp/raw/run6/mpd_run_Glob_ | ≡ |
| 6 | 1991 | 2017-03-18 20:33:48 | 2017-03-18 20:49:54 | C | 5.14 | C | 76.112108 | 65368 | 6.170 | /eos/nica/bmn/exp/raw/run6/mpd_run_Glob_ | ≡ |
| 6 | 1990 | 2017-03-18 20:31:00 | 2017-03-18 20:31:59 | C | 5.14 | C | 76.107547 | 6607 | 0.618 | /eos/nica/bmn/exp/raw/run6/mpd_run_Glob_ | ≡ |
| 6 | 1989 | 2017-03-18 20:26:47 | 2017-03-18 20:30:20 | C | 5.14 | C | 76.102794 | 29085 | 2.727 | /eos/nica/bmn/exp/raw/run6/mpd_run_Glob_ | ≡ |
| 6 | 1988 | 2017-03-18 19:58:22 | 2017-03-18 20:07:12 | C | 5.14 | C | 76.110363 | 41893 | 3.940 | /eos/nica/bmn/exp/raw/run6/mpd_run_Glob_ | ≡ |
| 6 | 1987 | 2017-03-18 19:44:02 | 2017-03-18 19:56:36 | C | 5.14 | C | 76.085479 | 79187 | 7.429 | /eos/nica/bmn/exp/raw/run6/mpd_run_Glob_ | ≡ |
| 6 | 1986 | 2017-03-18 19:40:21 | 2017-03-18 19:43:33 | C | 5.14 | C | 76.066589 | 24847 | 2.319 | /eos/nica/bmn/exp/raw/run6/mpd_run_Glob_ | ≡ |
| 6 | 1985 | 2017-03-18 19:29:55 | 2017-03-18 19:38:35 | C | 5.14 | C | 76.075318 | 47324 | 4.434 | /eos/nica/bmn/exp/raw/run6/mpd_run_Glob_ | ≡ |
| 6 | 1983 | 2017-03-18 19:21:51 | 2017-03-18 19:27:57 | C | 5.14 | C | 76.048702 | 53616 | 5.010 | /eos/nica/bmn/exp/raw/run6/mpd_run_Glob_ | ≡ |
| 6 | 1982 | 2017-03-18 13:56:23 | 2017-03-18 14:00:00 | C | 4.5 | C | 76.921612 | 5076 | 0.494 | /eos/nica/bmn/exp/raw/run6/mpd_run_Glob_ | ≡ |
| 6 | 1981 | 2017-03-18 13:35:49 | 2017-03-18 13:56:01 | C | 4.5 | C | 76.948587 | 261080 | 24.644 | /eos/nica/bmn/exp/raw/run6/mpd_run_Glob_ | ≡ |
| 6 | 1980 | 2017-03-18 13:21:09 | 2017-03-18 13:35:31 | C | 4.5 | C | 76.960804 | 208949 | 19.736 | /eos/nica/bmn/exp/raw/run6/mpd_run_Glob_ | ≡ |
| 6 | 1979 | 2017-03-18 13:06:39 | 2017-03-18 13:20:51 | C | 4.5 | C | 76.996687 | 209341 | 19.769 | /eos/nica/bmn/exp/raw/run6/mpd_run_Glob_ | ≡ |
| 6 | 1978 | 2017-03-18 12:54:32 | 2017-03-18 13:05:24 | C | 4.5 | C | 0.981394 | 112414 | 10.568 | /eos/nica/bmn/exp/raw/run6/mpd_run_Glob_ | ≡ |
| 6 | 1976 | 2017-03-18 10:28:33 | 2017-03-18 10:47:16 | C | 4.5 | C | 76.056474 | 84310 | 7.983 | /eos/nica/bmn/exp/raw/run6/mpd_run_Glob_ | ≡ |

Website –
bmn-web.jinr.ru

Platform – Vue.js

Architecture –
NPM + Vue.js + RawGit +
PostgreSQL

Server –
159.93.36.68

NICA Scheduler Configurator

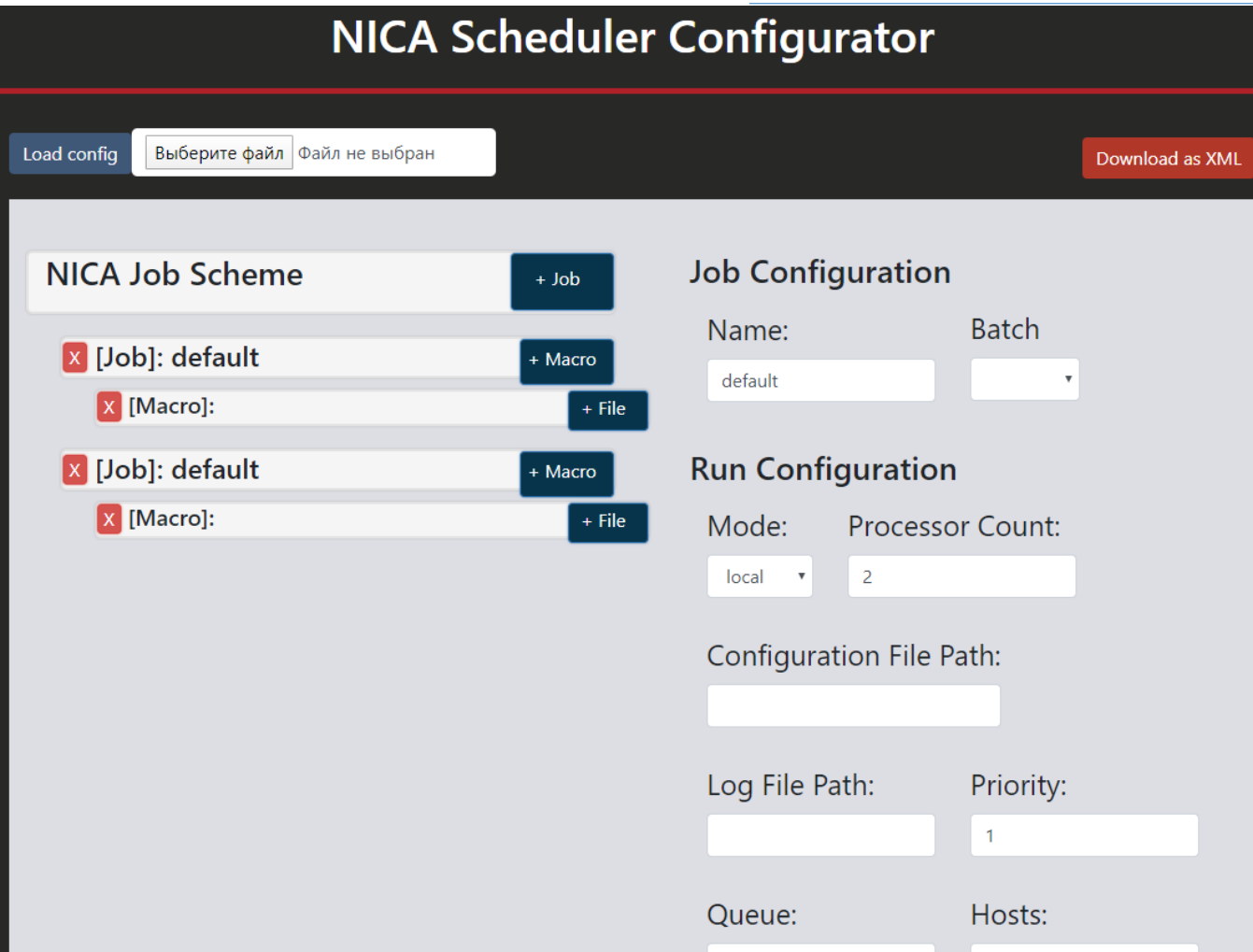
Website –
bm-n-scheduler.jinr.ru

Platform – self-written

Architecture –
HTML + JavaScript

Apache

Server –
159.93.63.29



The screenshot shows the NICA Scheduler Configurator web interface. At the top, there's a header with the title "NICA Scheduler Configurator". Below the header, there's a navigation bar with a "Load config" button, a file selection input (showing "Выберите файл" and "Файл не выбран"), and a "Download as XML" button. The main content area is divided into two columns. The left column is titled "NICA Job Scheme" and contains a list of job schemes. Each scheme has a red 'X' icon, a label "[Job]: default", and a "+ Macro" button. Below each job scheme, there's a "[Macro]:" label and a "+ File" button. The right column is titled "Job Configuration" and contains several input fields: "Name:" (with a text input containing "default"), "Batch:" (with a dropdown menu), "Mode:" (with a dropdown menu containing "local"), "Processor Count:" (with a text input containing "2"), "Configuration File Path:" (with a text input), "Log File Path:" (with a text input), "Priority:" (with a text input containing "1"), "Queue:" (with a text input), and "Hosts:" (with a text input).

- 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!