Student’s Zone 2019 of the NICA Project

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JINR DUBNA

Book of Abstracts
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Analysis of tracking efficiency and momentum resolution for MP-DRoot

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Analysis of tracking and PID efficiency in large Monte-Carlo simulations with MPDRoot

Android application for monitoring data from the Slow Control System for the TOF-MPD detector

Author: Krystian Roslon

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Android application for monitoring data from the Slow Control System for the TOF-MPD detector

Automatic, multipoint, high precision system for temperature measurement.

Author: Marcin Bielewicz

Co-authors: Krystian Roslon 2; Marek Peryt 3

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Goal:
In the nuclear processes main interest is the level of energy production. One of the methods of determining this value is a multi-point, high precision measurement of temperature change. The goal of this project is to design a measuring system that solves the problem described. Then the manual preparation of the measuring device, make a software for it and to perform a real temperature measurements. We use temperature high precision sensors type Pt 100, and LUMEL measurement modules. The set should be programmed for online working with the computer control. We will use the LabView environment for it. The set will be useful for calibration other less precision systems.

Description of the exercise:
1. Discussion of the issue of ADS reactors and temperature measurement.
2. Visiting of experimental site and the accelerators site.
3. Construction of an electronic measuring system (based on ready-made components) based on
high precision PT100 platinum sensors and the RS-485 protocol.
4. Create Measuring system software (or upgrade of existing software) using the LabView environ-
ment.
5. Calibration of the measuring system.
6. Temperature measurements, normalization of results and their comparison with other results -
practical analysis of the obtained results.
7. Preparation the own speech at the end of the student practice and for the conference after that,
and preparation the publication together with the practice supervisor based on the obtained re-
results.

Requirements for the students:
The subject is addressed to students interested in electronics, practical measuring systems and nu-
clear physics.
Basic knowledge of electronic layout.
Basic skills in using Excel program and the LabView environment.

Exercise for up to 4 students

Presentations of topics / 6

Collaboration tools for MPD

Author: Adam Kisiel

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Development, testing, deployment and maintenance of the collaboration and management IT tools
for large-scale scientific collaboration - case study for the MPD Collaboration. Evaluation of the
common tools: Trello, Discourse, Wiki, etc.

Presentations of topics / 40

Cosmic ray measurements - using those detectors in huge physical experiments as LHC or NICA.

Author: Marcin Bielewicz

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Goal:
Large detectors like ALICE in CERN are often equipped with additional cosmic ray detectors. These
detectors are used to obtain information about which tracks inside the detector came from the pas-
sage of a particle coming from an atmospheric cascade (eg: muons), and are not as a product of an
internal collision. They are also very useful for calibrating detectors such as TOF or TPC. The nature
of radiation changes in relation to the direction in the sky which we observe as well as the influence
of very thick walls or ground. The goal of this exercise is to self build a small cosmic ray detector
and making real measurements using it, and analyzed received results.

Description of the exercise:
1. Discussion of the issue of wide atmospheric showers and cosmic irradiation.
2. Construction of a small detector based on a scintillator and optical element SiPM type.
3. Carrying out measurements of cosmic radiation and determining the azimuth angle and the environment dependence.
4. Understanding the "arduino" control system and its programming.
5. Presentation the Cosmic Watch and CREDO program and the new cosmic radiation detector for the NICA collider (MCORD).
6. Preparation the own speech at the end of the student practice and for the conference after that, and preparation the publication together with the practice supervisor based on the obtained results.

Requirements for the students:
The subject is addressed to students interested: practical measurement systems, astrophysics, nuclear physics and electronics.
Basic knowledge of electronic layout.
Basic skills in using Excel program.

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Design and heat transfer simulations for the TOF_MPD detector cooling system

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Design and heat transfer simulations for the TOF-MPD detector cooling system

Presentations of topics / 13

Development of software for monitoring temperature inside the MPD-TOF detector

Author: Krystian Roslon

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The main task of the student will be to design the execution and software of the electronic system for measuring and monitoring the temperature of the detector elements based on platinum Pt100 thermoresistors. In order to acquire data, the student should use LabVIEW software and LUMEL SM1 modules. As part of the implementation of the subject of engineering work, there should also be a PCB design that implements the multiplexer task, which will be used in measuring the temperature inside the MPD-TOF detector.

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Development of the PLC controller software for the Mixer module of the MPD/TOF Gas System
Development of the PLC controller software for the Mixer module of the MPD/TOF Gas System

Development of the PLC controller software for the Recirculation module of the MPD/TOF Gas System

Development of the SCADA software for MPD/TOF Gas System in the Simens WinCC

Development of the data logging, archiving and exporting to database parameters of the MPD/TOF Gas System control software
TeFeNICA and Slow Control final presentations / 71

Development of visualisation for MPD experiment

Authors: Mateusz Kowal¹ ; Adam Kisiel²

Co-authors: Michalina Milewicz-Zalewska³ ; Marek Peryt ⁴ ; Nikita Dunin⁵ ; Krystian Roslon² ; Maciej Czarnynoga⁶ ; Daniel Dabrowski ²

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Monte Carlo simulation plays a significant role in particle physics. Therefore, it is important that the geometry of MPD components in software needs to be as close to real as possible. Visualising simulations helps to create actual projection of detector and generated particles. The Cosmic Ray Detector reduces the amount of muons counted for analysis by detecting cosmic radiation. With given geometry and functional code it can be added to MPD simulation. During presentation geometry of MPD will be shown as well as exemplary visualisation of collisions. The process of simulating events will be explained.

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Dosimetry setup prototype design for NI myRIO embedded device

Author: Nikita Dunin

Corresponding Author:

Design of Geiger counter module for nuclear and radiation safety using myRIO embedded controller

Presentations of topics / 45

Drive r, φ.

Authors: Adam Kisiel¹ ; Maciej Czarnynoga² ; Marek Peryt³ ; Michalina Milewicz-Zalewska⁴ ; Viacheslav Golovatyuk⁵

Co-authors: Daniel Dabrowski ³ ; Krystian Roslon ; Marcin Bielewicz ⁶ ; Nikita Dunin ⁷

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Goal:
R & D (research and development) and implementation of a real prototype drive system for various
sensors in the coordinate system: r, φ. We expect that a solution made in the technology of BOSCH
aluminum profiles will be proposed, easy to adapt to various applications. We expect the designed
solution to study areas up to 3mb x 2π. The drive system is National Instruments stepper motors,
LabView control, Ethernet interfaces.

Presentations of topics / 44

Drive x, y, z.

Authors: Adam Kisiel¹; Bartłomiej Juruc²; Daniel Dabrowski²; Krystian Rosłoń³; Maciej Czarnynoga⁴;
Marcin Bielewicz⁵; Marek Peryt⁶; Michalina Milewicz-Zalewska⁷; Nikita Dunin⁸; Vadim Babkin⁹; Viacheslav
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Goal:
R & D (research and development) we expect that a solution made in the technology of BOSCH alu-
minum profiles will be proposed, easy to adapt to various applications. We expect that the designed
solution will allow to study areas up to 3x3x10mb. The drive system is National Instruments stepper
motors, LabView control, Ethernet interfaces.

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Emergency situations testing and error handling of the MPD/TOF Gas System control software

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Emergency situations testing and error handling of the MPD/TOF Gas System control software

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EqDb Equipment Database.
**Authors:** Viacheslav Golovatyuk¹ ; Adam Kisiel² ; Michalina Milewicz-Zalewska³ ; Marek Peryt⁴ ; Tomasz Traczyk²

**Co-authors:** Vadim Babkin⁵ ; Marcin Bielewicz⁶ ; Maciej Czarnynoga⁷ ; Daniel Dabrowski⁴ ; Nikita Dunin⁵ ; Krystian Rosłon

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**Goal:** R & D (research and development) of EqDb Equipment Database, associated with the NICA Project. The Database Equipment database is at the stage of implementation and data filling. Test designed forms and the idea of data and process organization. Propose and test data recording from and to the Slow Control System.

**Presentations of topics / 41**

**Experimental measurement of the level of transmutation and neutron flux density in subcritical nuclear reactors ADS.**

**Author:** Marcin Bielewicz¹

¹ Nacional Centre for Nuclear Research

**Corresponding Author:** marcin.bielewicz@ncbj.gov.pl

**Goal:** Nuclear reactors type III and III + dominate on the world, currently. Safety considerations, as well as the increasing requirements, are reason on intensive research on type IV reactors. An example of it, is the subcritical nuclear reactor controlled by a beam from the accelerator "ADS". The key issue in the design of such reactors is the knowledge of the neutron flux density values inside the reactor. Consider methods for determining the level of transmutation in subcritical reactors by using nuclear threshold reactions to determine the density of fast neutron fluxes. The goal will be to perform practical measurements using germanium detectors, calibration of results and their analysis.

**Description of the exercise:**
1. Discussion of the differences (advantage and disadvantage) of various types of nuclear reactors compared to subcritical accelerator-controlled reactors
2. Participation in the experiment (if such will take place during the practice), and visiting of experimental site and the accelerators site.
3. Measurements of the samples gamma spectrum on germanium detector and detector calibration procedure. Samples irradiated in time of the experiment.
4. Analysis of obtained gamma spectra (Deimos program) and identification of isotopes.
5. Determination of the isotope content in the samples.
6. Normalization of results and their comparison with other results - practical analysis of the results obtained.
7. Determination of neutron flux density with energy above 10 MeV.
8. Preparation the own speech at the end of the student practice and for the conference after that, and preparation the publication together with the practice supervisor based on the obtained results.
Requirements for the students:
The topic is addressed to students interested in nuclear experimental physics using large research
equipment and/or nuclear energetic.
Basic knowledge of nuclear physics
Basic skills in using Excel program.

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Feasibility studies of baryon correlations in the MPD experiment at the NICA complex

Author: Adam Kisiel

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Monte-Carlo simulations of the baryon correlations with the MPD detector

Presentations of topics / 37

Fiber Optics splicing

Author: Michalina Milewicz-Zalewska

Corresponding Author:

Fiber Optics preparation, measurement and splicing.

Presentations of topics / 26

Gas Supply project for the MPD/TOF Gas System

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Gas Supply project for the MPD/TOF Gas System

Presentations of topics / 2

Generation of large UrQMD Monte-Carlo datasample with MPD-Root

Author: Adam Kisiel

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Generation of large datasamples using the UrQMD generator for selected collision energies, with the MPDRoot software

Presentations of topics / 3

Generation of large vHELLE datasamples with MPDRoot

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Generation of the large sample of Monte-Carlo events with the vHELLE model, using the MPDRoot software and the GEANT simulation package.

Presentations of topics / 31

Group collaboration tools for the software of MPD

Author: Oleg Vasilievich Rogachevsky

Corresponding Author: Group collaboration tools for the software of MPD

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Heat transfer simulation of the MPD-ITS detector

Authors: Krystian Roslon1 ; Maciej Czarnynoga2

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The student should examine the influence of the mesh density used simulation at the maximum temperature inside the detector and determine its optimal value. Then the simulations should be compared with the actual results measured with the FLUKE TiS-20 thermal imaging camera and with the results obtained during temperature measurements with Pt-100 thermistors.

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Heat transfer simulation of the MPD-TOF detector

Authors: Krystian Roslon1 ; Maciej Czarnynoga2
The student should examine the influence of the mesh density used simulation at the maximum temperature inside the detector and determine its optimal value. Then the simulations should be compared with the actual results measured with the FLUKE TiS-20 thermal imaging camera and with the results obtained during temperature measurements with Pt-100 thermistors.

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Heat transfer simulation of the MPD-TPC detector

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The student should examine the influence of the mesh density used simulation at the maximum temperature inside the detector and determine its optimal value. Then the simulations should be compared with the actual results measured with the FLUKE TiS-20 thermal imaging camera and with the results obtained during temperature measurements with Pt-100 thermistors.

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Heat transfer simulations for the PXI module and the CAEN module

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...heat flow simulations for the Pxi module and the CAEN module...

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Image taken by Fluke TiS20 visualization by LabVIEW

Author: Krystian Roslon\(^1\)

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An interface is a shared boundary across which two or more separate components of a computer system exchange information. The exchange can be between software, computer hardware, peripheral devices, humans and combinations of these. Some computer hardware devices, such as
a touchscreen, can both send and receive data through the interface, while others such as a mouse or microphone may only provide an interface to send data to a given system.

Hardware interfaces exist in many of the components, such as the various buses, storage devices, other I/O devices, etc. A hardware interface is described by the mechanical, electrical and logical signals at the interface and the protocol for sequencing them (sometimes called signaling).

Software interfaces provide access to computer resources (such as memory, CPU, storage, etc.) of the underlying computer system; direct access (i.e. not through well designed interfaces) to such resources by software can have major ramifications—sometimes disastrous ones—for functionality and stability.

The Fluke Ti20 Imager (hereafter, "the Imager") is a state-of-the-art, lightweight, pistol-grip style thermal imaging unit. Using the Imager, you can obtain instant and accurate thermal images and radiometric readings from distant targets. The Imager is ergonomically designed for right-hand or left-hand use, and captures thermal images and data with a simple trigger press. The Imager can store up to 50 images that can be downloaded to your personal computer for storage, analysis, and report preparation.

The InsideIR companion software application, lets you display, examine, and analyze your images and data to determine qualitative and quantitative trends associated with the target equipment. You can also use InsideIR to define maintenance databases based on your equipment conditions, monitoring, and asset management needs.

The Imager provides high performance thermal imaging and is designed for industrial use. The Ti20:
- Uses new detection technology to provide a clear thermal image with accurate temperature measurements up to 350 °C (662 °F).
- Is protected against dust and moisture (IP54 rated) for use in harsh industrial environments.
- Provides a minimum of 3 hours of continuous battery life.

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Inner tracker development

Author: Yuriy Andreevich Murin

Corresponding Author:

Inner tracker development

Presentations of topics / 43

Installation and implementation of JIRA and Confluence ATLAS-SIAN platforms for the Engineering Support for NICA Group.

Authors: Viacheslav Golovatyuk; Adam Kisiel; Michalina Milewicz-Zalewska; Marek Peryt; Krystian Roslon

Co-authors: Vadim Babkin; Marcin Bielewicz; Maciej Czarnynoga; Daniel Dabrowski; Nikita Dunin; Bartlomiej Juruc

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Goal:
R & D (research and development) works and installation of the Jira and Confluence ATLASSIAN platform, implementation of the NICA-MPD-PLATFORM project management system.

Presentations of topics / 15

Integration of temperature monitoring software inside RACK Master and Slave 19 "cabinets for the Slow Control System for the TOF-MPD detector

Author: Krystian Roslon

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Integration of temperature monitoring software inside RACK Master and Slave 19 "cabinets for the Slow Control System for the TOF-MPD detector

Presentations of topics / 46

Laboratory infrastructure

Authors: Daniel Dabrowski; Krystian Roslon; Maciej Czarny whole; Marcin Bielewicz; Marek Peryt; Michalina Milewicz-Zalewska; Nikita Dunin

Co-authors: Adam Kisiel; Vadim Babkin; Viacheslav Golovatych

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Goal:
R & D (research and development) and implementation, and modernization of installations making up the Laboratory’s infrastructure. The task includes: laying of cables, IT and earthing pipes. Designing and laying routes and cable tunnels for the entire Lab42 installation, detectors and devices dedicated to the experiment.

Presentations of topics / 5

Management of large-scale physics simulations

Author: Adam Kisiel

1 Warsaw University of Technology (PL)
Development of tools for running and monitoring large-scale Monte-Carlo simulations of physics events, using existing physics models and large-scale computing infrastructure of JINR (LIT, NICA Cluster, others).

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Mobile application for the MPD/TOF Gas System monitoring

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Mobile application for the MPD/TOF Gas System monitoring

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Model of the MPD Multi-Detector prepared with a 3D printing method

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Model of the MPD Multi-Detector prepared with a 3D printing method

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Model of the MPD detector

Author: Bartłomiej Juruc

Corresponding Author:

Complementation of the MPD detector’s technical sketches and simplified parts in 2D and 3D programs

Opis ćwiczenia.

Based on the actual dimensions of the MPD detector, make a model of it on an appropriate scale.

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Modeling of K+K- fermtoscopic correlations in p+Pb collision using the Therminator2 model

Author: Krystian Roslon

1 Warsaw University of Technology (PL)

Corresponding Author: krystian.roslon@cern.ch

Modeling of K+K- fermtoscopic correlations in p+Pb collision using the Therminator2 model

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Monitoring and stabilisation inside the testing laboratory of MPD-TOF

Authors: Klaudia Pachulska¹ ; Jędrzej Kołaś²

Co-author: Krystian Roslon²

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2 Warsaw University of Technology (PL)

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• General description of the whole system, list of it’s components and the importance of the system in the NICA project.
• Schematics of the temperature and humidity monitoring system inside 19” RACK cabinets.

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NICA-MPD-PLATFORM (NMP)

Authors: Daniel Dabrowski¹ ; Viacheslav Golovatyuk² ; Marek Peryt¹ ; Krystian Roslon²

Co-authors: Vadim Babkin³ ; Marcin Bielewicz⁴ ; Maciej Czarnynoga⁵ ; Nikita Dunin³ ; Bartłomiej Juruc ; Adam Kisieli⁶ ; Maciej Lawrynczuk⁷ ; Michalina Milewicz-Zalewska⁸ ; Tomasz Traczyk⁴

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Goal:
R & D (research and development) substantive and practical implementation of Students in design work NICA-MPD-PLATFORM. This is currently the largest project implemented in the Engineering Support group. The designed RACKs will include all power and control of the MPD detector.
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NMP Access Control

Authors: Jan Sobolewski¹; Marek Peryt²; Tomasz Traczyk³; Viacheslav Golovatyuk⁴; Wojciech Lis¹

Co-authors: Adam Kisiel¹; Daniel Dabrowski²; Krystian Roslon; Maciej Czarnynoga⁵; Maciej Lawrynczuk⁶; Marcin Bielewicz⁷; Michalina Milewicz-Zalewska⁸; Nikita Dunin⁹; Vadim Babkin⁴

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Goal:
R & D (research and development) and implementation of the ACS prototype for NICA-MPD-PLATFORM.

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NMP Alpha, beta, gamma monitoring

Authors: Adam Kisiel¹; Krystian Roslon;¹ Marcin Bielewicz²; Marek Peryt³; Nikita Dunin⁴; Viacheslav Golovatyuk⁵

Co-authors: Daniel Dabrowski³; Maciej Czarnynoga⁶; Maciej Lawrynczuk⁷; Michalina Milewicz-Zalewska⁸; Tomasz Traczyk¹; Vadim Babkin⁴

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Goal:
R & D (research and development) and implementation of the alpha, beta and gamma radiation monitoring system and dosimetry for NICA-MPD-PLATFORM.
NMP Cable tester

**Authors:** Daniel Dabrowski¹; Krystian Roslon¹; Maciej Czarnynoga²; Marcin Bielewicz³; Marek Peryt¹; Michalina Milewicz-Zalewska⁴; Nikita Dunin⁵; Vadim Babkin⁵; Viacheslav Golovatyuk⁶

**Co-authors:** Adam Kisiel⁷; Maciej Lawrynczuk⁸; Tomasz Traczyk⁷

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**Goal:**
R & D (research and development) and implementation of the cable tester prototype for NICA-MPD-PLATFORM.

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NMP Configurable screen for the control room.

**Authors:** Adam Kisiel¹; Maciej Lawrynczuk⁸; Marek Peryt³; Tomasz Traczyk¹; Viacheslav Golovatyuk⁴

**Co-authors:** Daniel Dabrowski¹; Krystian Roslon; Maciej Czarnynoga³; Marcin Bielewicz⁴; Michalina Milewicz-Zalewska⁷; Nikita Dunin⁸; Vadim Babkin⁸

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**Goal:**
R & D (research and development) a prototype of a large screen presenter, composed of at least 4x3 (ie 12 screens), easily switched and configured in various tables for data presentation and processes in the Slow Control System for NICA-MPD-PLATFORM.

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NMP Environmental monitoring MPD

**Authors:** Adam Kisiel¹; Maciej Czarnynoga²; Maciej Lawrynczuk³; Marek Peryt¹; Tomasz Traczyk¹; Viacheslav Golovatyuk³

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5 Joint Institute for Nuclear Research (RU)  
6 Nacional Centre for Nuclear Research  
7 Joint Institute for Nuclear Reactions  
8 JINR

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Goal:  
R & D (research and development) stabilization of environmental conditions for NICA-MPD-PLATFORM.

Presentations of topics / 63

NMP GPS Synchronization

Authors: Adam Kisiel¹; Maciej Czarnynoga²; Maciej Lawrynczuk³; Marek Peryt⁴; Tomasz Traczyk¹; Viacheslav Golovatyuk⁵

Co-authors: Daniel Dabrowski ⁴; Krystian Roslon; Marcin Bielewicz ⁶; Michalina Milewicz-Zalewska ⁷; Nikita Dunin ⁸; Vadim Babkin ⁸

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Goal:  
R & D (research and development) and implementation of a time synchronization system for c-RIO cassettes operating in real time, using synchronization and GPS servers, for NICA-MPD-PLATFORM.

Presentations of topics / 52

NMP Grounding monitoring

Authors: Viacheslav Golovatyuk¹; Adam Kisiel¹; Maciej Lawrynczuk³; Marek Peryt⁴; Tomasz Traczyk²

Co-authors: Vadim Babkin ⁵; Marcin Bielewicz ⁶; Maciej Czarnynoga ⁷; Daniel Dabrowski ⁴; Nikita Dunin ⁵; Michalina Milewicz-Zalewska ⁸; Krystian Roslon
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Goal: R & D (research and development) and implementation of a prototype of the earth circuit monitoring system for NICA-MPD-PLATFORM.

Presentations of topics / 53

NMP IPD Intelligent Power Distributor

Authors: Maciej Lawrynczuk\textsuperscript{1}; Marek Peryt\textsuperscript{2}; Rami Faraj\textsuperscript{None}; Tomasz Kowalski\textsuperscript{None}; Viacheslav Golovatyuk\textsuperscript{3}

Co-authors: Adam Kisiel \textsuperscript{4}; Daniel Dabrowski \textsuperscript{2}; Krystian Rosłon; Maciej Czarnynoga \textsuperscript{5}; Marcin Bielewicz \textsuperscript{6}; Michalina Milewicz-Zalewska \textsuperscript{7}; Nikita Dunin \textsuperscript{8}; Tomasz Traczyk \textsuperscript{2}; Vadim Babkin \textsuperscript{6}

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Goal: R & D (research and development), functional measurements and operational tests of the Intelligent Power Distributor for NICA-MPD-PLATFORM.

Presentations of topics / 54

NMP InteliPhy

Authors: Wojciech Lis\textsuperscript{1}; Adam Kisiel\textsuperscript{2}; Maciej Lawrynczuk\textsuperscript{3}; Marek Peryt\textsuperscript{4}; Nikita Dunin\textsuperscript{5}; Tomasz Traczyk\textsuperscript{2}; Viacheslav Golovatyuk\textsuperscript{6}; Jan Sobolewski\textsuperscript{1}

Co-authors: Daniel Dabrowski \textsuperscript{4}; Krystian Rosłon; Maciej Czarnynoga \textsuperscript{7}; Marcin Bielewicz \textsuperscript{8}; Michalina Milewicz-Zalewska \textsuperscript{9}; Vadim Babkin \textsuperscript{5}

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Goal: R & D (research and development), functional measurements and operational tests of the Intelligent Power Distributor for NICA-MPD-PLATFORM.
Goal:
R & D (research and development) implementation of a cable connection monitoring system for NICA-MPD-PLATFORM.

Presentations of topics / 55

NMP Monitoring of the Earth’s magnetic field

Authors: Adam Kisiel¹ ; Konrad KrawczykNone ; Marek Peryt² ; Viacheslav Golovatyuk³

Co-authors: Daniel Dabrowski² ; Krystian Rosłoń ; Maciej Czarnynoga⁴ ; Maciej Lawrynczuk⁵ ; Marcin Bielewicz⁶ ; Michalina Milewicz-Zalewska⁷ ; Nikita Dunin⁸ ; Tomasz Traczyk¹ ; Vadim Babkin⁸

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Goal:
R & D (research and development) and implementation of the Earth’s magnetic field monitoring system for NICA-MPD-PLATFORM.

Presentations of topics / 50

NMP SCADA WinCC

Authors: Adam Kisiel¹ ; Maciej Lawrynczuk² ; Marek Peryt¹ ; Viacheslav Golovatyuk⁴

Co-authors: Daniel Dabrowski¹ ; Krystian Rosłoń ; Maciej Czarnynoga⁴ ; Marcin Bielewicz⁶ ; Michalina Milewicz-Zalewska⁷ ; Nikita Dunin⁸ ; Tomasz Traczyk¹ ; Vadim Babkin⁸

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Goal:
R & D (research and development) and implementation of a control system, data presentation and processes on the SCADA WinCC platform, using the SIMENS industrial controllers for the NICA-MPD-PLATFORM.

Presentations of topics / 60

NMP Temperature monitoring

Authors: Krystian Roslon\textsuperscript{1}; Maciej Czarnynoga\textsuperscript{2}; Maciej Lawrynczuk\textsuperscript{2}; Marek Peryt\textsuperscript{3}; Viacheslav Golovatyuk\textsuperscript{4}

Co-authors: Adam Kisiel \textsuperscript{5}; Daniel Dabrowski \textsuperscript{3}; Marcin Bielewicz \textsuperscript{6}; Michalina Milewicz-Zalewska \textsuperscript{7}; Nikita Dunin \textsuperscript{8}; Tomasz Traczyk \textsuperscript{5}; Vadim Babkin \textsuperscript{8}

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Goal:
R & D (research and development) and implementation of temperature monitoring system for NICA-MPD-PLATFORM.

Presentations of topics / 36

Naming and numbering application development for Equipment Database

Author: Michalina Milewicz-Zalewska\textsuperscript{None}

Corresponding Author: milevich@jinr.ru

Development of an offline application in Python (preferably) for IOS, Android and Windows. Application should generate part identifiers according to naming and numbering convention of the NICA project.

Presentations of topics / 7
Non-organic surface modification with the solid state particle removal.

**Author:** Krystian Roslon

1 Warsaw University of Technology (PL)

**Corresponding Author:** krystian.roslon@cern.ch

Non-organic surface modification with the solid state particle removal. The surface will be used as an undercurrent for ongoing experiments.

Presentations of topics / 25

Pressure transmitters, mass flow controllers and control valves calibration and preparation for operation

**Author:** Daniel Dabrowski

1 Warsaw University of Technology (PL)

**Corresponding Author:** daniel.dabrowski@cern.ch

Pressure transmitters, mass flow controllers and control valves calibration and preparation for operation

Presentations of topics / 35

Remote control development for LabVIEW projects

**Author:** Nikita Dunin

**Corresponding Author:**

Creating software for remote control of LabVIEW projects (using web servers solutions or LabVIEW NXG) and basic integration with existed systems include fire protection system, magnetic measurements, Geiger counters and temperature sensors

Presentations of topics / 28

Setup of the NICA computing cluster

**Authors:** Yuriy Konstantinovich Potrebyennikov; Boris Georgyevich Shchino; Ilya Vyacheslavovich Slepnov; Andrey Genadyevich Dolbilov

**Corresponding Author:**

Setup of the NICA computing cluster

Presentations of topics / 22
Simulation of the MPD/TOF Gas System operation in the Fluidsim environment

Author: Daniel Dabrowski

1 Warsaw University of Technology (PL)

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Simulation of the MPD/TOF Gas System operation in the Fluidsim environment

Presentations of topics / 27

Software development for MPD

Author: Yurii Konstantinovich Potryebennikov

Corresponding Author:

Software development for MPD

TeFeNICA and Slow Control final presentations / 64

Software for device designed to measure radiation absorption of various materials

Authors: Maciej Marcinkiewicz; Michał Foltys

Co-author: Marek Peryt

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Presentation about software that was made on Slow Control Summer Practise 2019. Written in LabView, allows both common user and enginner to fully control the device designed to measure radiation absorption of various materials. Main functions:
- Start and stop measure
- Reset the device
- Read and save measure data
- Que the measures

Presentations of topics / 16

Studies of the MPD/TOF detector efficiency and time resolution for varying gas mixture components concentration.

Author: Daniel Dabrowski

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Studies of the MPD/TOF detector efficiency and time resolution for varying gas mixture components concentration.

TeFeNICA and Slow Control final presentations / 76

Study of magnetic field in MPD surrounding

Authors: Paulina Marikin¹; Jakub GłuchNone; Marek Peryt²

Co-authors: Adam Kisiel³; Michalina Milewicz-Zalewska⁴; Nikita Dunin⁵; Maciej Czarnynoga⁶; Krystian Roslon³; Daniel Dabrowski³

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Research and development of monitoring software to measure and save data of the Earth’s magnetic field for NICA-MPD-PLATFORM. Creation of system with use of magnetometer MAG3110 and NI myRio. Creation of the software to collect, record magnetic field and calibrate measurements.

Presentations of topics / 29

TPC detector construction

Author: Sergey Aleksandrovich MovchanNone

Corresponding Author:

TPC detector construction

Presentations of topics / 30

TPC read-out chambers development

Author: Sergey Aleksandrovich MovchanNone

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TPC read-out chambers development

General information / 38
Why did you come to Dubna?

Author: Marek Peryt¹

¹ Warsaw University of Technology

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Organizational matters, what we do in Dubna in JINR.