Conception and development of the system for the magnetic field strength measurement in the NICA-MPD PLATFORM surroundings created using Ni myRio technology
Presentation plan

1. Project description
2. Used devices
3. User interface
4. Principles of operation
5. Possible usage
Project description

- Measuring the magnetic field using a magnetometer
- Development of program for measuring device control, data gathering and saving
- Continuation of Konrad Krawczyk work
  - Choice of devices
  - First program
Magnetometer MAG 3110

Made by Waveshare

Range: 0.1\( \mu \)T-1000\( \mu \)T

Measurement in 3 axes

Measurement speed up to 12.5ms

Communicating via I2C
Ni myRIO 1900

Made by National Instruments

Using FPGA technology

Using NI Labview
FPGA Technology

Field Programmable Gate Array

Designed to be configured by a user

Wide range of possible applications: control system engineering, real time video engine, image processing, data monitoring etc.
Communication

Use only 4 wire

Use of ports:

- 30 - DGND
- 32 - I2C.SCL (Serial Clock Line)
- 33 - +3.3V
- 34 - I2C.SDA (Serial Data Line)
User interface

Run Panel
User interface

Engineering Panel
User interface

Service Panel
Principle of operation

- Change of configuration
- Initialization
- Gathering of raw data
- Data output, saving
- Data processing
Principle of operation

data processing

- Averaging over set time
- Converting to μT
- Applying calibration modifiers
Calibration

Before calibration

After calibration

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Possible usage

- Recording of the background magnetic field
- Recording disturbances of electrical devices in rack cabinet
- Uniformity of the magnetic field in the magnet
Thank you for your attention