

# Muzalevskii Ivan, Ph.D. 30 y.o.



- **Contacts**

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- **Languages**

Russian (native), English (advanced),

Czech (intermediate), German (beginner)

- **Links**

<https://www.researchgate.net/profile/Ivan-Muzalevskii>

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## Resume

I would like to get position in experimental nuclear physics, focusing on exotic system studies. I possess a large variety of technical knowledge and practical skills and experience, primarily in experimental data analysis (mostly by ROOT), handling with semiconductor and scintillator detectors, software development (e.g. EXPERTroot), simulation of experiments. I have recently finished Ph.D. program in University in Opava, Czech republic and defended the thesis on the topic "Population and investigation of the light neutron rich nuclei in direct reactions". I have about 8 years experience of working in international collaborations (NUSTAR at FAIR), advanced skills of public presentations, article publishing and intercultural communication.

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## Professional experience

**2017 – present.** ACCULINNA group, Flerov Laboratory of Nuclear Reactions, Joint Institute for Nuclear Research, Dubna, Russia

- The leading role in data analysis and simulations of experiments at ACCULINNA-2 fragment separator with ROOT, EXPERTroot methods
- Contribution in the development of the framework EXPERTroot dedicated for simulation, reconstruction, data acquisition, detector calibration and data analysis
- Performing laboratory studies, detectors and hardware tests, software development for data acquisition
  - Development of a novel calibration technique and thickness inhomogeneity analysis of silicon detectors allowing to achieve well particle identification
  - Contribution in development GO4 methods for online monitoring and preliminary analysis

**2017-present VISITING GSI/FAIR, Darmstadt, Germany;**

- Laboratory tests of multichannel read-out system for ToF silicon detectors, development a software for the data acquisition and analysis. Contribution in the experiment at FRS [pub1]
- Investigation of the correlation of the time resolution of time-to-digital converters with the signal shape [pub2]
- Laboratory tests of the NeuRad detector prototype. Studies of the detector's pulse formation; development of the simulation methods in EXPERTroot [pub3]

## Education

### Bachelor's Degree with honors (2011-2015)

Dubna State University, Department of Theoretical Physics.

### Master's Degree (2015-2017)

Dubna State University, Department of Fundamental Problems of Microworld Physics

Master's Thesis: "Studies of the NeuRad detector properties within the EXPERT project".

### Ph.D. Degree in Physics (2017-2023)

Silesian University in Opava, Faculty of Philosophy and Science, Theoretical Physics and Astrophysics

Ph.D. thesis: "Population and investigation of the light neutron rich nuclei in direct reactions".

## Skills

- Experience in simulation of experiments and data processing using C++, Root, FAIRroot, EXPERTroot
- Conducting laboratory experiment; experience with work silicon, scintillation detectors in experiments at FLNR (JINR) and GSI at FAIR
- Computer skills: Unix/Linux/Windows, C++, Root, FAIRroot, EXPERTroot, bash Mathematica, LaTeX, Python
- Other: nuclear reaction physics, particle detectors, data acquisition, experimental data analysis, writing & publishing manuscripts, giving presentations

## Publications

The full list of publications is in ResearchGate. The most important of which are:

- I. A. Muzalevskii, A. A. Bezbakh, E. Yu. Nikolskii, et al., "Interfering reaction channels observed in the  $^2\text{H}(^8\text{He}, ^4\text{He})^6\text{H}$  reaction studies", EPJ Web of Conferences 290, 09001 (2023)
- I. A. Muzalevskii, A. A. Bezbakh, E. Yu. Nikolskii, et al., "Resonant states in  $^7\text{H}$ : Experimental studies of the  $^2\text{H}(^8\text{He}, ^3\text{He})$  Reaction". *Phys. Rev. C*, 103:044313, Apr 2021
- I.A. Muzalevskii, N.B.Shulgina, A.A. Bezbakh, et al., "Population of tetra-neutron continuum in reactions of  $^8\text{He}$  on deuterium", <https://doi.org/10.48550/arXiv.2312.17354>, 2024
- I. A. Muzalevskii, V. Chudoba, S. G. Belogurov, et al., "Detection of the low energy recoil  $^3\text{He}$  in the reaction  $^2\text{H}(^8\text{He}, ^3\text{He})^7\text{H}$ ". *Bulletin of the Russian Academy of Sciences: Physics*, 84:500–504, 2020
- A. A. Bezbakh, V. Chudoba, S. A. Krupko, et al., "Evidence for the first excited state of  $^7\text{H}$ ". *Phys. Rev. Lett.*, 124:022502, Jan 2020
- E. Yu. Nikolskii, I. A. Muzalevskii, A. A. Bezbakh, et al., " $^6\text{H}$  states studied in the  $^2\text{H}(^8\text{He}, ^4\text{He})$  reaction and evidence of an extremely correlated character of the  $^5\text{H}$  ground state". *Phys. Rev. C*, 105:064605, Jun 2022
- E. Yu. Nikolskii, et al., "Study of proton and deuteron pickup reactions ( $d, ^3\text{He}$ ), ( $d, ^4\text{He}$ ) with  $^8\text{He}$  and  $^{10}\text{Be}$  radioactive beams at ACCULINNA-2 fragment separator". *Nuclear*

- A. A. Bezbakh, et al., “Detector Array for the  $^7\text{H}$  Nucleus Multi-Neutron Decay Study”. *Phys. Part. Nuclei Lett.* 20, 629–636 (2023)
- Kostyleva et al., “Study of the silicon detectors for the time-of-flight measurements at the Super-FRS facility and EXPERT experiments at FAIR”. *Acta Physica Polonica Series B:503*

### **Schools & conferences**

- 5th European Nuclear Physics Conference, “Investigation of the  $^7,6\text{H}$  states in t  $^8\text{He}+\text{d}$  interaction”, 2022, University of Santiago de Compostela
- III International Scientific Forum “Nuclear Science and Technologies”, Almaty 2021, “Investigation of the  $^7,6\text{H}$  states in t  $^8\text{He}+\text{d}$  interaction” Machine Learning and Data Analysis for Nuclear Physics, a Nuclear TALENT Course at the ECT 2020
- Nucleus 2020, Dubna 2019, “Search for  $^7\text{H}$  at ACCULINNA-2”
- 6th International FAIR School 2019, Italy
- 24th European conference on few-body problems in physics, 2019, Surrey
- Euroschool on Exotic Beams 2019, Denmark
- Nuclear theory for nuclear experiments workshop, 2018, Surrey
- Euroschool on Exotic Beams 2018, Belgium
- XXI International Scientific Conference of Young Scientists and Specialists 2017, Dubna
- In addition, over 10 talks on international collaboration meetings and scientific seminars in Russia, Czech Republic, Poland, Germany.

### **Grants & awards**

- Student Grant Foundation of the Silesian University in Opava, Grant No. SGF/2/2020, which was realized within the EU OPSRE project entitled "Improving the quality of the internal grant scheme of the Silesian University in Opava", reg. number: CZ.02.2.69/0.0/0.0/19\_073/0016951
- Russian Science Foundation Grant No. 22-12-00054 and the Russian Science Foundation Grant No. 17-12-01367
- JINR grant for young scientists and specialists 2022
- JINR award for young scientists and specialists 2019,2021,2022
- JINR prize 2020, 2022
- Best poster award at 24th European Conference on Few-Body Problems in Physics

### **Hobby**

Skiing, hiking, kayaking, wakeboard