

Last updated: 16.07.2024

Education

10.2022 – now **Physical Sciences**, PhD Program

The Doctoral School of Exact and Natural Sciences, University of Warsaw

Supervisor: Michał Tomza (*Institute of Theoretical Physics, University of Warsaw*)

10.2020 – 09.2022 **Physics**, Computer Modeling of Physical Phenomena, Master's Degree with distinction

Faculty of Physics, University of Warsaw

Supervisor: Michał Tomza (*Institute of Theoretical Physics, University of Warsaw*)

10.2016 – 05.2020 **Technical Physics**, Bachelor's Degree

Faculty of Physics and Applied Computer Science, AGH University of Science and Technology

Supervisor: Andrzej Biborski (*Academic Centre for Materials and Nanotechnology, AGH-UST*)

Research experience

10.2020 – now **University of Warsaw**

Researcher at Tomza's Quantum Molecular Systems Group. Student/PhD stipendist in the FNP First Team Grant 'Quantum engineering of novel ultracold complex molecular systems: from diatomic to polyatomic molecules'

I investigated the properties of two highly magnetic atoms in harmonic trap and worked on the model of the rotating impurity in 2D Bose-Einstein Condensate.

Supervisors: Michał Tomza, Anna Dawid-Lękowska

10.2023 – 11.2023, **University of Tokyo**

Visiting PhD student at Ashida Group

I investigated Rydberg impurity problems.

Supervisors: Ashida Yuto

07.2021 – 10.2021, **Institute of Science and Technology Austria**

07.2022 – 08.2022 Scientific intern at Lemeshko Group

I worked on the model of the rotating impurity in 2D Bose-Einstein Condensate

Supervisors: Artem Volosniev, Mikhail Lemeshko

10.2018 – 02.2020 **AGH University of Science and Technology**

Student researcher at Theory of Quantum Systems Group

I compared different ab initio numerical methods for calculation of electronic properties of light-atom based systems in correlated states

Supervisor: Andrzej Biborski

07.2019 – 08.2019 **Nicolaus Copernicus University in Toruń**

Participant of The Torun Astrophysics/Physics Summer Program

I performed quantum chemistry calculations for actinide compounds

Supervisor: Katharina Boguslawski

07.2018 **Institute of Nuclear Physics, Polish Academy of Science**

Participant of Particle Physics Summer Student Programme 2018

I evaluated data/simulation correction for LHCb collaboration

Supervisor: Agnieszka Dziurda

10.2017 – 03.2019 **AGH University of Science and Technology**

Student researcher at Bołd-Grabowska Group

I performed data analysis for ATLAS collaboration and helped with data quality monitoring at CERN

Supervisor: Iwona Grabowska-Bołd

03.2016 – 05.2019 **AGH University of Science and Technology**

Member of SKNF Bozon

I took part in various smaller research projects as a member of SKNF Bozon, including building set for austic levitations, calculation of Madelung constant for crystals or analysis of Hénon-Heils system

Supervisors: Czesław Kapusta, Radosław Strzałka

Publications

Michał Suchorowski, Anna Dawid-Łękowska, Michał Tomza, *Two highly magnetic atoms in one-dimensional harmonic trap*, Phys. Rev. A 106, 043324 (2022)

Michał Suchorowski, Alina Badamshina, Mikhail Lemeshko, Michał Tomza, Artem G. Volosniev, *Quantum rotor in a two-dimensional mesoscopic Bose gas*, submitted to SciPost Physics, arXiv:2407.06046 (2024)

Schools and workshops

26.09.2022 – Doctoral Training: Quantum Mixtures of Ultracold Atomic Gases - Les Houches School of Physics, *Grenoble University (Les Houches, France)*

27.02.2022 – Winter Graduate School 2022 on AMO Physics, 'Strong correlations in Rydberg physics and chemistry', *Harvard University (Oracle, Arizona, USA)*

23.08.2021 – Quantum 2021: Dynamics and local control of impurities in complex quantum environments *Institute Pascal, Université Paris-Saclay (online)*

21.09.2020 – Autumn School on Correlated Electrons: Topology, Entanglement, and Strong Correlations *Forschungszentrum Jülich (online)*

16.09.2019 – Autumn School on Correlated Electrons: Many-Body Methods for Real Material *Forschungszentrum Jülich (Jülich, Germany)*

Conference talks and posters

Rotation of the molecule in two-dimensional condensate

10 – 11.06.2024 Masovian Symposium on Quantum, Optical and Atomic Physics, *Warsaw, Poland*, poster

5 – 9.02.2024 Quantum Simulators workshop, *Paris, France*, poster

17 – 20.09.2023 Ultracold mixtures: polarons and beyond, *Oxford, UK*, poster

- 5 – 8.09.2023 Workshop on Ultracold molecules, *Warsaw, Poland*, poster
- 20 – 23.02.2023 Minerva-Gentner Symposium on Coherent manipulation of few-body complexes, *Rehovot, Israel*, poster
- 26.09 – 7.10.2022 Les Houches School of Physics, *Les Houches, France*, poster

Two highly magnetic atoms in the 1D harmonic trap

- 02 – 04.06.2022 EPS Forum, *Paris, France*, poster
- 12 – 15.05.2022 III Studencka Międzyuczelniana Ogólnopolska Konferencja , *Kraków, Poland*, talk
- 02 – 03.2022 Winter Graduate School 2022 on AMO Physics, *Oracle, Arizona, USA*, poster
- 19 – 20.10.2021 2nd Symposium on Cold Interactions and Collisions, *Toruń, Poland*, talk
- 30.08 – 03.09.2021 Sympozjum Młodych Naukowców Wydziału Fizyki, *online*, talk
- 05 – 08.08.2021 International Conference of Physics Students 2021, *online*, talk
- 06 – 08.07.2021 52nd Conference of the European Group on Atomic Systems, *online*, poster
- 26 – 30.04.2021 International Conference for Young Professionals in Physics and Technology, *online*, talk

Ab initio calculations of hydrogen-based systems in correlated states

- 10 – 17.08.2019 International Conference of Physics Students 2019, *Cologne, Germany*, poster
- 21 – 24.11.2019 XVIII Ogólnopolska Sesja Kół Naukowych Fizyków, *Kraków, Poland*, poster
- 09.05.2019 56. Konferencja Studenckich Kół Naukowych, *Kraków, Poland*, talk

Methods for calculating the Madelung constant

- 09.05.2019 56. Konferencja Studenckich Kół Naukowych, *Kraków, Poland*, talk

Hunt for a bare truth – t-quark pair analysis

- 08 – 14.08.2018 International Conference of Physics Students 2018, *Helsinki, Finland*, poster
- 10.05.2018 55. Konferencja Studenckich Kół Naukowych, *Kraków, Poland*, talk

The Henon-Heiles system - a bit of chaos in Physics

- 02 – 03.06.2018 Interdyscyplinarna Studencka Konferencja Matematyczno-przyrodnicza „Sempowisko”, *Kraków, Poland*, talk
- 10.05.2018 55. Konferencja Studenckich Kół Naukowych, *Kraków, Poland*, talk

Construction of the device for acoustic levitation of small objects

- 11.05.2017 54. Konferencja Studenckich Kół Naukowych, *Kraków, Poland*, talk

In numbers:

- 2 talks and 11 posters on international conferences
- 8 talks and 2 posters on national conferences

Seminar talks

Rotation of the molecule in two-dimensional condensate

- 14.04.2023 BEC Seminar, *CFT PAN*
- 31.03.2023 Condensed Matter Seminar, *University of Warsaw*
- 27.03.2023 Atomic Optics Seminar, *Jagiellonian University*

- 11.04.2022 Lemeszko's group seminar, *Institute of Science and Technology Austria*
- 18.11.2021 Seminar 'Modeling of Complex System', *University of Warsaw*
- 08.11.2021 Quantum Molecular Systems seminar, *University of Warsaw*
- 22.10.2021 Lemeszko's group seminar, *Institute of Science and Technology Austria*

Two highly magnetic atoms in a harmonic trap

- 28.03.2022 Quantum Molecular Systems seminar, *University of Warsaw*

Ab initio description of light-atom-based systems in correlated states

- 16.11.2020 Quantum Molecular Systems seminar, *University of Warsaw*

Voluntary & leadership activity

- 11.2016 – 03.2020 **Students scientific circle SKNF Bozon on AGH-UST**
Active member, Vicepresident (06.2017 - 01.2019), President (01.2019 - 12.2019)
Role: organisation of weekly seminars and meetings, co-organisation of various events popularizing science (in total 14 events), co-organisation of scientific and integration trips, co-organization of the students' conferences (in total 5 conferences)
- 05.2018 – now **Polish Association of Physics Students**
Founder and active member, President (11.2018 - 12.2019), Member of Executive Committee (11.2018 - now)
Role: founding member of the organisation, co-organisation of General Assemblies, responsible for finances and accounting, co-organisation of ScienCon 2022
- 06.2017 – now **International Association of Physics Students**
Active member, Vicepresident of Local Committee Kraków (06.2017-01.2019), President of National Committee Poland (01.2019-12.2019), Representative of National Committee Poland (01.2019-10.2020)
Role: representing the Polish physics students' society on the international level

Selected organised events

- 31.03 – 03.04.2022 **International competition of planning future scientific research *ScienCon 2022***. 4-day long event during which physics students from Poland and abroad plan their future scientific career with the help of mentors from the best Polish universities and companies.
- 2018,2019 **1st and 2nd edition of Prof. Antoni Hoborski's Conference for Science Students (*Studencka Konferencja Nauk Ścisłych*)** in 2018 and 2019, national conference held at AGH-UST. Later continued by successors for next two editions.
- 19 – 20.10.2017 **National Academic Conference *Emotions of Robots in Narrative of Culture and Technology*** held at AGH-UST. Co-organised by the Faculty of Physics and Applied Computer Science and Faculty of Humanities, a unique event connecting AI specialists with sociologists and science fiction writers.

Competitively acquired funding

- 05.2021 – now Grant **Preludium** 22 NCN "Circular Rydberg atom - exotic magnetic impurity in ultracold quantum environment": 204 960.00 PLN
Role: Principle Investigator

- 05.2021 – now **Microgrant UW for Doctoral Students** from IDUB fund “Short term visit in prof. Ashida group at University of Tokyo”: 24 990.18 PLN
- 05.2021 – 06.2022 **Grant within the “Social Responsibility of Science/Perfect Science” (Społeczna Odpowiedzialność Nauki/Doskonała Nauka) program**: 50 182.00 PLN
- Organization of international competition of planning future scientific research *ScienCon 2022*. Awarded by Ministry of Education and Science, Poland. Role: member of the organising committee.

Awards

Scholarship “2nd call for proposals for research on POB-related topics”

Scholarship for PhD students researching area related to POB topics.

Scholarship to Start for Doctoral Candidates

Scholarship from Rector’s Fund for the top point score in the admissions procedure in a given discipline.

Rector’s scholarship at AGH-UST and University of Warsaw

Scholarship awarded to the best students with the highest GPA received in academic years 2016/17, 2018/19 and 2019/20 at AGH-UST and 2020/21 at University of Warsaw.

Award for the Best Student Association at AGH-UST

Award received by SKNF Bozon in 2017, 2018 and 2019 when I was member of the Executive Committee

Awards for the best talks or posters

Four times the best talk or poster on the national conference, best talk on the international conference

Skills

- Language **Polish** native
- English** fluent, Cambridge Certificate in Advanced English, level C1
- Research **Numerical and analytical calculations** for the ultracold and condensed matter quantum many-body system
- Computing **C,C++** advanced level
incl. Standard Library, ROOT library, basics of OOP, GNU Scientific Library, MPI
- Python** advanced level
incl. NumPy, Scipy, Pandas, matplotlib, VPython, Kwant package, Keras, Tensorflow
- Matlab** advanced level
- Julia** advanced level
- Experience in **Linux, Git, multiprocessing**