

Dr. Andrzej Piotr Kądziaława

Curriculum Vitae

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Experience

- 2018 – **Researcher**, *IT4Innovations National Supercomputing Centre*, Ostrava, Czechia.
Modelling for Nanotechnologies Lab; Responsibilities: Development of software for magnetic symmetry detection and assessment of the interaction scale (python3); Design of new materials including robust Cobalt alloys and permanent magnets (VASP); Utilization of HPC libraries to model strongly-correlated electron systems with disorder (C++17).
- 2017 – **Researcher & Lecturer**, *Marian Smoluchowski Institute of Physics*, Kraków, Poland.
Member of MAESTRO team (–2018); Responsibilities: Development of high-performance low-level quantum-chemical libraries (C++17); Expansion and administration of the new computational cluster (to ~12 TFLOPS DP); Teaching (cf. Teaching section); Organization of *Spin to Cooper Pairs* conference; Research (cf. [andrzejkadzielawa.github.io](https://github.com/andrzejkadzielawa));
- 2015 – 2017 **Research assistant**, *Marian Smoluchowski Institute of Physics*, Kraków, Poland.
Member of MAESTRO team; Responsibilities: Development of high-performance low-level libraries for realistic crystalline systems (C++11, python2.7); Acquisition and administration of the new computational cluster (~8 TFLOPS DP) for Institute of Physics; Organization of *Spin to Cooper Pairs* conference; Research (cf. [andrzejkadzielawa.github.io](https://github.com/andrzejkadzielawa));

Education

- 2011 – 2015 **PhD in Physics**, *Jagiellonian University*, Kraków, Poland, *summa cum laude*.
First-Principle Approach to Electronic States and Metal - Insulator Transition in Selected Correlated Model Systems
- 2006 – 2011 **MSc in Physics**, *Jagiellonian University*, Kraków, Poland, Uniform interdisciplinary program with 2-years-long thesis research; physics, mathematics, computer science and biology; final grade **5.0**.
Evolution of a massless test scalar field on Boson Star space-time
- 2010 **Graduate Level**, *Niels Bohr Institute*, Copenhagen, Denmark.
Courses in Quantum Field Theory, Topology, Differential Geometry, and Quantum Optics

Research and Scientific Activities

Conferences, Schools and Seminars

- 2013 – **18 oral presentations, seminars & invited lectures**, (cf. ↘).
- 2012 – **11 poster presentations**, (cf. [andrzejkadzielawa.github.io/projects](https://github.com/andrzejkadzielawa) for details).

Publications

- 2013 – **8 papers**, in *peer-reviewed journals*, (cf. [andrzejkadzielawa.github.io/articles](https://github.com/andrzejkadzielawa) for details).

Phys. Rev. B, Scientific Reports, Comput. Phys. Commun., New J. Phys., Acta Phys. Pol. A, Eur. Phys. J. B

Topics include: **Condensed Matter Physics,**
Computational Methods

ab-initio calculations, metallization hydrogen,
high-performance computing, multilevel parallelism

Miscellaneous

- 2020 – **Standardní Projekt (GAČR)**, *Tailoring thermal stability of W-Cr based alloys for fusion applications*, Principal Investigator.
- 2018 – **IT4Innovations National Supercomputing Center**, *Path to Exascale*, Researcher.
- 2015 – 2018 **Project MAESTRO (NCN)**, *Fundamental Properties of Strongly Correlated Systems: Unconventional Superconductivity, Quantum Critical Behavior, and Complex Electronic Structure*, Researcher.
- 2012 – 2015 **Project TEAM (FNP)**, *Correlations and coherence in quantum materials and structures - unique properties on macro and nano scales*, doctoral scholarship.
- 2010 **Erasmus student exchange**, Niels Bohr Institute, University of Copenhagen, Danmark.

Teaching

- 2017 – **research and teaching assistant**, *Faculty of Physics*, Jagiellonian University, Kraków.
3D Geometry for Video Games Programming, Basics of Computer Programming: C with Elements of C++, Advanced Object Programming Techniques in C++, Robotics Laboratory, and Programming of Real-Time Physics
- 2013 – 2018 **teaching assistant**, *civil contract*, Jagiellonian University, Kraków.
Programming of Real-Time Physics for game developers
- 2011 – 2015 **doctoral student / teaching assistant**, *Faculty of Physics*, Jagiellonian University, Kraków.
Courses included: Physics 101, Physics Laboratory, and Programming of Real-Time Physics

Skills

Programming

C-family
C
C++11
C++17

Libraries			
GNU Scientific Library	OpenMP	OpenMPI	LAPACK++
CBLAS	qmt	SPGLib	CUBA
OpenGL	GLU(T)	Armadillo	CUDA
Compilers			
GCC	Clang	llvm	Intel C++ Compiler
IDEs			
personalized vim	Microsoft Visual Studio	kDevelop	Eclipse
Other			
Intel Parallel Studio XE	Valgrind	accelerator offloading	generic programming
Modules			
NumPy	SciPy	Matplotlib	Mayavi 2
JorG	SPGLib	Sympy	TensorFlow
IDEs			
personalized vim	IDLE	PyCharm	kDevelop
Other			
visualization	fluent in RegEx's	fluent in parallelism	3D geometry
Fortran			
v95	v2008	VASP	LAPACK
Other			
RegEx's	Agile (XP)	PBS Professional	git
Wolfram Mathematica	office-suite	L ^A T _E X	Gnuplot
Godot 3.0	GoLang	Bash	awk

Python
v3
v2.7

other

Administrative tasks

- 2016 – 2019 **administration of Computational Cluster** EDABI, *Jagiellonian University*, Kraków, Poland.
acquisition (2016) and expansion (2018); performance of ~ 12 TFLOPS DP
- 2013 – **(co-)writing grant proposals**.
eg. National Science Centre (NCN) grants, grant-in-aid for two-week visit at the University of Parma;

Languages

CEFR levels

Polish (native)	English (C2)	Spanish (B1)	German (B1)
	Czech (A2)	Danish (A1)	Russian (A1)

Interests

professional

- electronic correlations
- stochastic algorithms

- computational physics
- low-level computing

other

- traveling and hiking
- scuba-diving

- tea
- gaming

Licenses

driving licence
diving licence
licence

A, B
Advanced Open Water Diver, Ice Diver
counsellor

motorcycles and cars
PADI
day care