Dr. Andrzej Piotr Kądzielawa

Curriculum Vitae

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& Ostrava, Czechia
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Mellechowicz

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 comptutational cluster (to ~ 12 `TFLOPS DP`); Teaching (cf. Teaching section); Organization of *Spin to Cooper Pairs* conference; Research (cf. andrzejkadzielawa.github.io);

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);

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 and Quantum Optics

Research and Scientific Activities

Conferences, Schools and Seminars

2013 – **14 oral presentations, seminars & invited lectures**, (cf. ↘).

2012 – **10 poster presentations**, (cf. `andrzejkadzielawa.github.io/projects` for details).

Publications

2013 – **8 papers**, *in peer-reviewed journals*, (cf. `andrzejkadzielawa.github.io/articles` 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

2015 – 2018 **Project MAESTRO**, *Researcher*, National Science Centre (NCN).
Fundamental Properties of Strongly Correlated Systems: Unconventional Superconductivity, Quantum Critical Behavior, and Complex Electronic Structure

2012 – 2015 **Project TEAM**, *doctoral scholarship*, Foundation for Polish Science (FNP).
Correlations and coherence in quantum materials and structures - unique properties on macro and nano scales

2010 **Erasmus student exchange**, Erasmus programme.
Niels Bohr Institute, University of Copenhagen

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 – **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`

Python `v3` `v2.7`

other

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*	*LaTeX*	*Gnuplot*
Godot 3.0	*GoLang*	*Bash*	*awk*

Administrative tasks

2016 – **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)**
	Russian (A1)	**Danish (A1)**	**Czech (A1)**

Interests

professional
- electronic correlations
- stochastic algorithms
- computational physics
- low-level computing

other
- traveling and hiking
- scuba-diving
- tea
- gaming

Licenses

driving licence **A, B** *motorcycles and cars*
diving licence **Advanced Open Water Diver, Ice Diver** *PADI*
licence **counsellor** *day care*