

Kacper Topolnicki, CV

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Personal details

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Education

- **2014**
 - Ph.D. - Physics
 - *institution*: Faculty of Physics, Astronomy and Applied Computer Science of the Jagiellonian University
 - *description*: My thesis titled: “The two-nucleon and three-nucleon systems in three dimensions” was successfully defended on the 23 of September 2014. Subsequently I was awarded a Ph.D. degree in physics on 25 September 2014 after the positive decision of the Faculty of Physics, Astronomy and Applied Computer Science council.

- **2011-2012**

- ≈ 0.5 year Internship at the Institute of Nuclear Physics in Jülich
- *institution*: Institut für Kernphysik, Forschungszentrum Jülich, Germany
- *description*: My half year stay at the interdisciplinary research center in Jülich gave me the possibility to have direct access to specialists in parallel computing on large computing clusters. This was a great opportunity and had a big impact on my research.

- **2010-2014**

- International PhD Studies
- *institution*: Faculty of Physics, Astronomy and Applied Computer Science of the Jagiellonian University
- *description*: On my second year of regular PhD studies I switched over to the International PhD Studies in Applied Nuclear Physics and Innovative Technologies. The studies lasted for four years. My chosen topic “Few-nucleon fusion reactions” was being supervised of professor Jacek Golak.

- **2009-2014**

- Ph.D. studies in Physics
- *institution*: Faculty of Physics, Astronomy and Applied Computer Science of the Jagiellonian University
- *description*: PhD studies in Nuclear Physics under the supervision of professor Jacek Golak. My research was focused on the description of few (two, three) nucleon systems. The character of my work was theoretical and included the development of effective implementations of numerical calculations on large computing clusters (JUQUEEN at the Jülich Supercomputing Centre). A large portion of my efforts were focused on developing consistent methods for treating the complicated algebraic expressions that arise in the calculations. The development of these methods was made possible with the use of symbolic programming within the Mathematica system.

- **2009**

- M.Sc - Physics
- *institution*: Faculty of Physics, Astronomy and Applied Computer Science of the Jagiellonian University
- *description*: In 2009 I finished my five year studies in physics (majored in theoretical physics). My masters thesis titled: “Lattice models of chiral liquid crystal phases in Monte Carlo simulations” was written under the supervision of professor Lech Longa.

- **2004-2009**

- Studies in Physics

- *description*: Faculty of Physics, Astronomy and Applied Computer Science of the Jagiellonian University
- *institution*: In 2004 I started “Studies in Mathematics and Natural Sciences”. I chose to specialize in theoretical physics.

Positions

- **2020-**
 - [current position] adiunkt (english equivalent: assistant professor) at the Institute of Physics, Jagiellonian University, Kraków, Poland
- **2017-2020**
 - [3 years] asystent naukowy (english equivalent: research assistant) at the Institute of Physics, Jagiellonian University, Kraków, Poland
- **2014-2017**
 - [2015, ≈ 0.5 year] post-doc at Texas A&M University Commerce
 - various grants (more information in **Grants** section)
- **2009-2014**
 - [2009-2014, 5 years] PhD student at the Institute of Physics (nuclear theory, few body systems), Jagiellonian University, Kraków, Poland
 - [2010-2014, 4 years] stipend from the International PhD Studies in Applied Nuclear Physics and Innovative Technologies
 - [2011-2012, ≈ 0.5 year] internship at the Nuclear Physics Institute (IKP) in Forschungszentrum Jülich, Germany

Grants

- principal investigator
 - [2017-2020, 3 years] SONATA 11
 - * *funding agency*: National Science Center, Poland
 - * *grant number*: DEC-2016/21/D/ST2/01120
 - * *title*: “Development of analytical and numerical computation techniques related to few-nucleon systems”
 - [2014-2016, 2 years] PRELUDIUM 6
 - * *funding agency*: National Science Center, Poland
 - * *grant number*: DEC-2013/11/N/ST2/03733
 - * *title*: “Development of techniques using a three dimensional representation of nucleonic degrees of freedom in few-nucleon bound and scattering state calculations”
- co-executor

- [2017] HARMONIA 8
 - * *funding agency*: National Science Center, Poland
 - * *grant number*: DEC-2016/22/M/ST2/00173
 - * *title*: “Utilizing consistent chiral nuclear potentials and electroweak currents in order to describe three nucleon reactions and properties of nuclei”
- [2014-2016] HARMONIA 5
 - * *funding agency*: National Science Center, Poland
 - * *grant number*: DEC-2013/10/M/ST2/00420
 - * *title*: “Investigation of the properties of light nuclei and three body processes based on chiral nuclear potentials)”

Skills and experience

- academic interests
 - few body systems
 - nuclear theory
 - numerical calculations
 - teaching
- languages
 - Polish (native)
 - English (CAE - 2003, CPE - 2006)
- programming
 - parallel computing on large computing clusters using MPI, OPENMP
 - Wolfram Language, Fortran (different flavours), python (different flavours), c, bash
 - other programming languages with less proficiency
- software
 - linux
 - standard Linux tools
 - LaTeX, gnuplot, Mathematica

Publications (WOS, I 2021)

Talks

Other interests

- my blog
- *music*: Tom Waits, Geln Gould
- *sport*: skiing, windsurfing, air-soft