

Curriculum Vitae

Personal information

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Affiliation (1):

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Date of Birth: May 9, 1952, **Place of Birth:** Płońsk, POLAND

Present Employment: Emeritus at the University of York and the University of Warsaw

Education and degrees

Secondary studies: School "Jan Zamoyski" in Warsaw

MSc in Physics with honours: University of Warsaw, 1974

PhD in Theoretical Nuclear Physics with honours: University of Warsaw, 1979

“Self-consistent method for the determination of nuclear inertia parameters”

DSc (habilitation): University of Warsaw, 2 September 1991

Professor degree: University of Warsaw, 8 July 1997

Employment history

Assistant: University of Warsaw, 1974 – 1980

Adjunct professor: University of Warsaw, 1980 – 1993

Associate professor: University of Warsaw, 1993 – 31 January 2002

Full professor: University of Warsaw, 1 February 2002 – 31 May 2015

FiDi professor: University of Jyväskylä, 1 January 2007 – 31 December 2017

Adjunct Senior Scientist: Helsinki Institute of Physics, 1 January 2014 –31 December 2019, honorary position

Full professor: University of Warsaw, 1 June 2015 – 10 September 2025, honorary position

Full professor: Chair in Theoretical Nuclear Physics, University of York, 1 June 2015 – 10 September 2025

Emeritus: University of York and University of Warsaw, 11 September 2025 – present

Visiting Positions

Postdoc: 18 months at the Institut de Physique Nucléaire, Orsay, France, 1981 – 1982

Postdoc: 12 months at the W. K. Kellogg Laboratory, California Institute of Technology, Pasadena, USA, 1982 – 1983

Visiting associate: 12 months at the Centre d'Etudes Nucléaires de Saclay, Saclay, France, 1987 – 1988

Visiting associate: 9 months at the Institut de Physique Nucléaire, Orsay, France, 1988 – 1989

Visiting scholar: twice at the Institute for Nuclear Theory, Seattle, USA, for the total period of 6 months, 1995 – 2000

Visiting professor: three times at the Stellenbosch University, South Africa, for the total period of 4 months, 1990 – 1993

Visiting professor: nine times at the Centre de Recherches Nucléaires de Strasbourg, Institut de Recherches Subatomiques de Strasbourg, Université Louis Pasteur, Strasbourg, France, for the total period of 23 months, 1992 – 2005

Visiting professor: nine times at the Joint Institute for Heavy Ion Research, Oak Ridge National Laboratory, Oak Ridge, and University of Tennessee, Knoxville, USA, for the total period of 39 months, 1991 – 2013

□ MSc and PhD Supervision

1. Krzysztof Burzyński, MSc, 1991: **Description of configuration mixing in many-body systems within the generator coordinate method**
2. Elżbieta Perlińska, MSc, 1994: **Description of nuclear mean fields at high angular momenta**
3. Krzysztof Burzyński, PhD, 1996: **Self-consistent description of proton impurities in nuclear matter of neutron stars**
4. Jolanta Karny, MSc, 1999: **Rotational bands in superdeformed nuclei in the rare-earth region**
5. Elżbieta Perlińska, PhD, 2001: **Self-consistent description of proton-neutron correlations in atomic nuclei**
6. Rainald Kirchner, PhD, 2002: **Particle-number conserving mean-field description of drip-line nuclei**
7. Przemysław Olbratowski, PhD, 2004: **Chiral and magnetic rotation in atomic nuclei studied within self-consistent mean-field method**
8. Francesco Raimondi, PhD, 2011: **Higher-order energy density functionals in nuclear self-consistent theory**
9. Yuan Gao, PhD, 2015: **Uncertainty analysis and symmetry restoration in nuclear self-consistent methods**
10. Gianluca Salvioni, PhD, 2019: **Model nuclear energy density functionals derived from *ab initio* calculations**
11. Antonio Márquez Romero, PhD, 2020: **Neutron-proton pairing correlations in atomic nuclei**
12. David Muir, PhD, 2021: **Microscopic Modelling of Collective Quadrupole Excitations of Nuclei**, co-supervised with Alessandro Pastore
13. Paolo Livio Sassarini. MPhil, 2023: **Nuclear moments in density functional theory**

□ Most important scientific positions of trust and administration

Head of the Nuclear Structure Theory Division, Institute of Theoretical Physics, University of Warsaw, Poland, March 1997 – August 2016

Member of the Board of Directors of the European Centre for Theoretical Studies in Nuclear Physics and Related Areas (ECT*), Trento, Italy, June 2001 – June 2004

Member of the National Advisory Committee of the Institute for Nuclear Theory at the University of Washington, USA, 2002 – 2004, **Chairman** 2003 – 2004

Member of the RIA Theory Group Executive Committee, USA, 2004 – 2005

Member of the UK STFC Nuclear Physics Grant Panel, 2008 – 2018

Member of the Program Advisory Committee (PAC) of the JYFL Accelerator Laboratory, University of Jyväskylä, 2008 – 2010, **Chairman** 2009 – 2010

Member Belgian FNRS Commission des Sciences Exactes et Naturelles, 2010 – 2015

Member of the Steering Committee and Board of the Training in Advanced Low Energy Nuclear Theory (TALENT), 2011 – 2019

Member of the CERN-ISOLDE and Neutron Time-of-flight Committee (INTC), Switzerland, 2013 – 2016

Member of the Science and Technology Facilities Council DiRAC Oversight Committee, UK, 2017 – 2023

Member of the Science and Technology Facilities Council Particle Physics / Nuclear Theory Sub-Panel of the DiRAC Resource Allocation Committee, UK, 2018 – 2023

Member of the University of York Physics Equality and Inclusion Committee, UK, 2020 – 2025

Member of the Science and Technology Facilities Council Nuclear Physics Advisory Panel (NPAP), UK, Member: 2021 – 2022, **Chair**: November 2022 – December 2024

Trustee of the WW Smith fund, Physics, University of York, UK, 2021 – 2025

Most important scientific acknowledgements and awards

Award: Rector of the University of Warsaw, 19 November 1999

Academic Grant for Professors: Foundation for Polish Science (FNP), 14 June 2003

Finland Distinguished Professor Grants: Academy of Finland, 2006 & 2012

Award: Rector of the University of Warsaw, 19 November 2008

Award: Rector of the University of Warsaw, 19 November 2014

Science & Technology Facilities Council (STFC) Grant, 1/06/15 → 30/09/18

Wojciech Rubinowicz scientific prize: Polish Physical Society, 7 September 2015

Doctor Honoris Causa: Claude Bernard Lyon 1 University, 20 November 2017

Scientific work

- Properties of collective quadrupole states.
- Boson expansions in many-fermion systems.
- Mean-field and pairing properties of nuclei far from stability.
- Monte-Carlo method to determine exact ground-state energies of many-fermion based on generalised coherent states.
- Spontaneous left-right symmetry breaking under fast rotation and self-consistent description of superdeformed states in nuclei.
- Properties of neutron-star crust within self-consistent mean-field methods.
- Self-consistent description of exotic nuclear shapes with a particular emphasis on tetrahedral and octahedral minima properties.
- Building novel energy density functionals to describe nuclear spectroscopic data in beyond-mean-field approaches.
- Self-consistent description of nuclear fission.
- Nuclear electromagnetic and exotic moments to study properties of fundamental interactions in nature.

Summary of the publication record as of 19th November 2025 (from Web of Science)

290 papers published, of which **23** in **Physical Review Letters** and **4** in **Nature** and **Nature Physics**, plus **four** papers submitted or in press

Number of citations **14,639** (without self-citations: **13,167**)

h-index of 68

171 invited and contributed talks

99 conference communications

My most cited paper (**945 times**) is: Hartree-Fock-Bogolyubov description of nuclei near the neutron-drip line, J. Dobaczewski, H. Flocard, and J. Treiner, Nucl. Phys. A422, 103-139 (1984).

Complete list of publications: http://www.fuw.edu.pl/~dobaczew/Dobaczewski_LP.pdf

Leadership role in organising scientific research

In 1997 – 2015, I was the Head of the Nuclear Structure Theory Division at the Institute of Theoretical Physics at the University of Warsaw. During this time, I have been leading the scientific activity and defining research directions of a group of five to six nuclear theorists and numerous MSc and PhD students. At the same time, I was the Principal Investigator of a series of highly competitive research grants awarded by the Polish Committee for Scientific Research (KBN) and the Polish Ministry of Science and Higher Education:

No. 2 P03B 034 08	1995 – 1997	11 participants	Budget of 310 000 PLN
No. 2 P03B 040 14	1998 – 2000	10 participants	Budget of 160 000 PLN
No. 5 P03B 014 21	2001 – 2003	12 participants	budget of 300 000 PLN
No. 1 P03B 059 27	2004 – 2006	14 participants	budget of 275 000 PLN
No. N N 202 328234	2008 – 2011	12 participants	budget of 250 000 PLN

Although the nominal budgets of these grants were not particularly large, they have consistently been among the largest awarded by Polish grant agencies. The research activities of these grants attracted nuclear physicists from other Polish institutions beyond the University of Warsaw's immediate research environment. In 2003, I was awarded a prestigious Academic Grant for Professors of the Foundation for Polish Science (<http://www.fnp.org.pl/en>). This grant of 240,000 PLN and 36 months was to co-finance MSc and PhD students collaborating with my research group.

The most substantial and fascinating leadership opportunity began for me in 2006, when I was awarded the Academy of Finland FIDIPRO (Finland Distinguished Professor) grant (<http://www.fidipro.fi/>) for 60 months, which I held at the University of Jyväskylä. In 2012. I was awarded the second FIDIPRO grant for the years 2013 – 2017. Equal amounts of financial support from the University of Jyväskylä matched these grants. They allowed me to build an entirely new group of theorists who could undertake ambitious tasks.

On 1 June 2015, another fantastic opportunity began for me when I was appointed the Chair in Theoretical Nuclear Physics at the University of York, UK. My mission at York was to establish a new theory group that would complement the work of York's experimental groups and work closely with theory groups at the Universities of Manchester and Surrey, as well as other groups across Europe and beyond.

Published computer codes

Four large computer codes published in 12 papers:

HFBTHO: *Comput. Phys. Commun.* [167 \(2005\) 43](#)

HFBRAD: *Comput. Phys. Commun.* [168 \(2005\) 96](#)

HOSPHE: *Comput. Phys. Commun.* [181 \(2010\) 1641](#)

HFODD: *J. Phys. G: Nucl. Part. Phys.* [48 \(2021\) 102001](#), plus 8 earlier publications.

Meetings organised and co-organised

Numerous memberships in steering and programme committees of international conferences.

The following conferences and workshops were organised:

Nuclear Structure for the 21st Century (INT-00-3), Institute for Nuclear Theory, Seattle, USA, 2 October - 10 December 2000

NATO Advanced Research Workshop: High Spin Physics 2001, Warsaw, Poland, 6-10 February 2001

Towards a Universal Density Functional for the Nucleus, workshop at the Institute for Nuclear Theory, Seattle, 26-30 September 2005, in the framework of the fall INT program **Nuclear Structure Near the Limits of Stability** (INT-05-3)

First FIDIPRO-JSPS Workshop on Energy Density Functionals in Nuclei, Keurusselka, Finland, 25-27 October 2007

FIDIPRO-UNEDF collaboration meeting on nuclear energy-density-functional methods, Jyväskylä, Finland, 9-10 October 2008

Arctic FIDIPRO-EFES Workshop: Future Prospects of Nuclear Structure Physics, Saariselkä, Finland, 20-24 April 2009

Information and statistics in nuclear experiment and theory (ISNET-5), York, UK, 6-9 November 2017

FiDiPro Winter Symposium on Nuclear Structure Physics, Jyväskylä, Finland, 11-15 December 2017

Nuclear Physics Symposium “Challenges in theory of heavy nuclei”, York, UK, 17-20 July 2019

Workshop on “Future of Theory in Fission”, York, UK, 14-16 October, 2019

Peer review activities

Numerous **papers peer-reviewed** for *Nature*, *Physical Review Letters*, *Physical Review C*, *Nuclear Physics A*, *European Journal of Physics A*, *Journal of Physics G*, *Europhysics Letters*, *Computer Physics Communications*, *Foundations of Physics*, *Physics Letters B*.

Numerous **grant applications peer-reviewed** for Polish Ministry of Science and Higher Education (MNiSW), Polish National Science Centre (NCN), Polish National Centre for Research and Development (NCBiR), Foundation for Polish Science (FNP), European Research Council (ERC), Fonds de la Recherche Scientifique (FNRS), Croatian Science Foundation (HRZZ), Natural Sciences and Engineering Research Council of Canada (NSERC), Office of Science of the U.S. Department of Energy (DOE), and European Science Foundation (ESF).

Numerous **peer-reviewed** job applications, promotion applications, MSc Theses, PhD Theses, and DSc Theses.

Memberships in editorial boards of international journals and professional societies

Member of the Polish Physical Society, Poland

Fellow of the American Physical Society, USA (15 November 1998)

Member of the Institute of Physics, UK

Associate Editor of Nuclear Physics A, March 2000 – December 2016

Member of the Editorial Board of Physical Review C, 2006 – 2008

Member of the Editorial Board of Journal of Physics G, 2008 – 2022

Specialist Editor of Computer Physics Communications, 2011 – 2014

Associate Editor of Journal of Physics G, 2014 – 2016

Editor-in-Chief of Journal of Physics G, 2017 – 2022

Member of the Editorial Board of Annual Review of Nuclear and Particle Science, 2025 – present

Teaching and dissemination

During my 51-year academic career, I have taught numerous courses and tutorials in all subjects of the theoretical physics curriculum, as well as in many subjects of mathematics, experimental physics, and numerical methods taught at the University of Warsaw. In particular, I taught Quantum Mechanics, Electrodynamics, Thermodynamics, Statistical Physics, Classical Mechanics, Many-Body Theory, and Theoretical Nuclear Physics.

I gave numerous graduate and post-graduate theoretical-nuclear-physics courses at various international schools, and in particular at:

- International Summer School on Subatomic Physics, 2nd Course (Beijing) 2001
- Ecole Internationale Joliot-Curie (Maubuisson) 2002
- 3rd International Balkan School of Nuclear Physics (Thessaloniki) 2002
- Third RIA Summer School on Exotic Beam Physics (Argonne) 2004
- Ecole Doctorale de Physique, Chimie Physique et Mathématiques (Strasbourg), 2005
- Theoretical nuclear physics school "Exotic Nuclei: New Challenges" (Les Houches) 2007
- The 18th Jyväskylä Summer School (Jyväskylä) 2008
- 15th Euroschool on Exotic Beams (Piaski) 2008
- 20th Chris Engelbrecht Summer School in Theoretical Physics (Stellenbosch) 2009
- ECT* Doctoral Training Programme, Strongly Correlated Quantum Systems (Trento) 2009
- The 9th CNS-EFES International Summer School (Tokyo) 2010
- The 18th STFC UK Postgraduate Nuclear Physics Summer School (Lancaster) 2015
- The TALENT Course on *Density functional theory and self-consistent methods* (York) 2016

Based on my courses and lectures, I am currently writing a **book on “Nuclear structure physics, mean-field methods and density functionals”** – contract with Oxford University Press UK.