

## CURRICULUM VITAE

### 1. Personal information

**Name:** Jacek Dobaczewski  
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**E-mail:** Jacek.Dobaczewski@fuw.edu.pl  
**WWW:** <http://www.fuw.edu.pl/~dobaczew/>  
**Date of Birth:** May 9, 1952  
**Place of Birth:** Płońsk, POLAND  
**Family Status:** Married to Anna Kuśmidrowicz-Król,  
two sons (Michał born 1977 and Piotr born 1985)  
**Present Employment:** Professor, University of Warsaw & University of Jyväskylä

### 2. Education and Degrees

**Secondary studies:** School "Jan Zamoyski" in Warsaw  
**M.Sc. in Physics:** University of Warsaw, 1974  
**Ph.D. in Theoretical Nuclear Physics:** University of Warsaw, 1979  
**D.Sc. (habilitation):** University of Warsaw, 2 September 1991  
**Professor degree:** University of Warsaw, 8 July 1997

### 3. 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 – present  
**FiDi professor:** University of Jyväskylä, 2007 – 2011

#### 4. 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, U.S.A., 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 professor:** Stellenbosch University, South Africa,  
August-September 1990
- Visiting professor:** *Centre d'Etudes Nucléaires de Saclay*  
Saclay, France, November-December 1990
- Visiting professor:** Stellenbosch University, South Africa,  
September-October 1991
- Visiting scholar:** Joint Institute for Heavy Ion Research  
Oak Ridge, U.S.A., November 1991
- Visiting professor:** Louisiana State University  
Baton Rouge, U.S.A., November 1991
- Visiting professor:** *Centre de Recherches Nucléaires de Strasbourg*  
Strasbourg, France, November 1992 – February 1993
- Visiting scholar:** Joint Institute for Heavy Ion Research  
Oak Ridge, U.S.A., July 1993
- Visiting professor:** Stellenbosch University, South Africa,  
August-September 1993
- Visiting professor:** *Centre de Recherches Nucléaires de Strasbourg*  
Strasbourg, France, October 1993 – December 1993
- Visiting professor:** Joint Institute for Heavy Ion Research  
Oak Ridge, U.S.A., October 1994 – December 1994
- Visiting scholar:** Joint Institute of Heavy Ion Research  
Oak Ridge, U.S.A., July 1995
- Visiting scholar:** Institute for Nuclear Theory  
Seattle, U.S.A., October – December 1995
- Visiting professor:** *Centre de Recherches Nucléaires de Strasbourg*  
Strasbourg, France, January 1996
- Visiting scholar:** Joint Institute of Heavy Ion Research  
Oak Ridge, U.S.A., August 1996
- Visiting professor:** *Centre de Recherches Nucléaires de Strasbourg*  
Strasbourg, France, October – December 1996
- Visiting professor:** University of Tennessee and Oak Ridge National Laboratory  
Oak Ridge, U.S.A., January 1997 – January 1998
- Visiting professor:** *Institut de Recherches Subatomiques de Strasbourg*  
Strasbourg, France, July 1998
- Visiting professor:** *Institut de Recherches Subatomiques de Strasbourg*  
Strasbourg, France, June – July 1999
- Visiting professor:** *Institut de Recherches Subatomiques de Strasbourg*  
Strasbourg, France, January – July 2000

**Visiting professor:** Joint Institute for Heavy Ion Research  
Oak Ridge, U.S.A., August – September 2000

**Visiting scholar:** Institute for Nuclear Theory  
Seattle, U.S.A., October – December 2000

**Visiting professor:** *Institut de Recherches Subatomiques de Strasbourg*  
Strasbourg, France, June – July 2002

**Visiting professor:** University of Tennessee and Oak Ridge National Laboratory  
Oak Ridge, U.S.A., October 2003 – January 2005

**Visiting professor:** *Université Louis Pasteur*  
Strasbourg, France, 14 June – 13 July, 2005

**Visiting professor:** University of Tennessee and Oak Ridge National Laboratory  
Oak Ridge, U.S.A., July 2006

## 5. Professional Societies & Activities:

**Member:** Polish Physical Society

**Member:** American Physical Society, Fellow 15 Nov. 1998

**Co-organizer:** ECT\* International Workshop on "Structure of Nuclei far from  $\beta$ -Stability", Trento, May 20-31, 1996

**Head:** Nuclear Structure Theory Division, Institute of Theoretical Physics, University of Warsaw, March 1997 – present

**Co-organizer:** INT Theory Program "Nuclear structure for the 21st century" Seattle, October 1 – December 10, 2000

**Associate Editor:** Nuclear Physics A, March 2000 – present

**Scientific Secretary and Editor of Proceedings:** International Conference "High Spin Physics 2001" Warsaw, February 6 – 10, 2001

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

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

**Member:** National Science Foundation panel to evaluate 2001 proposals in nuclear theory, January 2002

**Co-ordinator:** ECT\* Doctoral Training Programme 2003, Trento, Italy, June – September 2003

**Co-organizer:** INT workshop "Towards a Universal Density Functional for the Nucleus", Seattle, September 26-30, 2005

**Member:** RIA Theory Group Executive Committee, 2004 – 2005

**Member:** Editorial Board of Physical Review C, 2006 – 2008

**Co-organizer:** First FIDIPRO-JSPS Workshop on Energy Density Functionals in Nuclei Jyväskylä, Finland, October 25-27, 2007

- Member:** Program Advisory Committee, Jyväskylä Accelerator Laboratory, 2007 – 2010  
Chairman 2009 – 2010
- Member:** Editorial Board of Journal of Physics G, 2008 – 2013
- Organizer:** FIDIPRO-UNEDF Collaboration Meeting  
on Nuclear Energy Density Functional Methods  
Jyväskylä, Finland, October 9-10, 2008
- Member:** Nuclear Physics Grant Panel, STFC, United Kingdom, 2009 – 2011
- Co-organizer:** Arctic FIDIPRO-EFES Workshop on Future Prospects of Nuclear Structure Physics  
Saariselkä, Finland, April 20-24, 2009
- Member:** *Commission scientifique: Sciences Exactes et Naturelles – 2 (SEN-2)*,  
FNRS, Belgium, 2010 – 2012

## 6. Awards & Honors:

- Award:** Rector of the University of Warsaw, 19 November 1999
- Professorial Grant:** Foundation for Polish Science (FNP), 14 June 2003
- FIDIPRO Grant:** Academy of Finland, 2007 – 2011
- Award:** Rector of the University of Warsaw, 19 November 2008

## 7. M.Sc. and Ph.D. Supervision:

- Krzysztof Burzyński, M.Sc. 1991:** Description of configuration mixing in many-body systems within the generator coordinate method
- Elżbieta Perlińska, M.Sc. 1994:** Description of nuclear mean fields at high angular momenta
- Krzysztof Burzyński, Ph.D. 1996:** Self-consistent description of proton impurities in nuclear matter of neutron stars
- Jolanta Karny, M.Sc. 1999:** Rotational bands in superdeformed nuclei in the rare-earth region
- Elżbieta Perlińska, Ph.D. 2001:** Self-consistent description of proton-neutron correlations in atomic nuclei
- Rainald Kirchner, Ph.D. 2002:** Particle-number conserving mean-field description of drip-line nuclei
- Przemysław Olbratowski, Ph.D. 2004:** Chiral and magnetic rotation in atomic nuclei studied within self-consistent mean-field method
- Francesco Raimondi, Ph.D. 2011:** Higher-order energy density functionals in nuclear self-consistent theory

## 8. Publications:

On December 27, 2011, my list of publications contained the following numbers of papers:

	Total
Papers published in periodicals	184
Papers submitted for publication in periodicals and papers in press	1
Popularized papers for general public	4
Papers published as preprints and e-prints	6
Conference invited talks	107
Conference communications	85
Total	353 <sup>a</sup>

<sup>a</sup>Excluding conference invited talks and communications that have been published in periodicals.

## 9. Citations:

According to the Web of Science, up to December 27, 2011 my papers have been cited 6170 times, with the h-index of 44. The papers cited one hundred or more times are:

	No. of citations
1. <b>J. Dobaczewski</b> , H. Flocard, J. Treiner: <i>Hartree-Fock-Bogolyubov description of nuclei near the neutron-drip line</i> , Nucl. Phys. <b>A422</b> (1984) 103.	483
2. <b>J. Dobaczewski</b> , W. Nazarewicz, T.R. Werner, J.F. Berger, C.R. Chinn, J. Dechargé: <i>Mean-field description of ground-state properties of drip-line nuclei: Pairing and continuum effects</i> , Phys. Rev. <b>C53</b> (1996) 2809.	344
3. <b>J. Dobaczewski</b> , I. Hamamoto, W. Nazarewicz, J.A. Sheikh: <i>Nuclear shell structure at particle drip lines</i> , Phys. Rev. Lett. <b>72</b> (1994) 981.	251
4. S. Ćwiok, <b>J. Dobaczewski</b> , P.-H. Heenen, P. Magierski, W. Nazarewicz: <i>Shell Structure of the Superheavy Elements</i> , Nucl. Phys. <b>A611</b> (1997) 211.	230
5. P.-G. Reinhard, D.J. Dean, W. Nazarewicz, <b>J. Dobaczewski</b> , J.A. Maruhn, M.R. Strayer: <i>Shape coexistence and the effective nucleon-nucleon interaction</i> , Phys. Rev. <b>C60</b> (1999) 014316.	154
6. M.V. Stoitsov, <b>J. Dobaczewski</b> , W. Nazarewicz, S. Pittel, D.J. Dean: <i>Systematic study of deformed nuclei at the drip lines and beyond</i> , Phys. Rev. <b>C68</b> (2003) 054312.	119
7. P. Bonche, <b>J. Dobaczewski</b> , H. Flocard, P.-H. Heenen, J. Meyer: <i>Analysis of the Generator Coordinate Method in a study of shape isomerism in <sup>194</sup>Hg</i> , Nucl. Phys. <b>A510</b> (1990) 466.	119

	No. of citations
8. D. Rudolph, C. Baktash, M.J. Brinkman, E. Caurier, D.J. Dean, M. Devlin, <b>J. Dobaczewski</b> , P.-H. Heenen, H.-Q. Jin, D.R. LaFosse, W. Nazarewicz, F. Nowacki, A. Poves, L.L. Riedinger, D.G. Sarantites, W. Satuła, C.-H. Yu: <i>Rotational bands in the doubly magic nucleus <math>^{56}\text{Ni}</math></i> , Phys. Rev. Lett. <b>82</b> (1999) 3763.	118
9. B. Chen, <b>J. Dobaczewski</b> , K.-L. Kratz, K. Langanke, B. Pfeiffer, F.-K. Thielemann, P. Vogel: <i>Influence of shell-quenching far from stability on the astrophysical <math>r</math>-process</i> , Phys. Lett. <b>B355</b> (1995) 37.	108
10. M. Bender, <b>J. Dobaczewski</b> , J. Engel, W. Nazarewicz: <i>Gamow-Teller strength and the spin-isospin coupling constants of the Skyrme energy functional</i> , Phys. Rev. <b>C65</b> (2002) 054322.	103
11. B. Gall, P. Bonche, <b>J. Dobaczewski</b> , H. Flocard, P.-H. Heenen: <i>Superdeformed rotational bands in the mercury region; a cranked Skyrme-Hartree-Fock-Bogoliubov study</i> , Z. Phys. <b>A348</b> (1994) 183.	102
12. D. Rudolph, C. Baktash, <b>J. Dobaczewski</b> , W. Nazarewicz, W. Satuła, M.J. Brinkman, M. Devlin, H.-Q. Jin, D.R. LaFosse, L.L. Riedinger, D.G. Sarantites, C.-H. Yu: <i>Prompt proton decay of a well-deformed rotational band in <math>^{58}\text{Cu}</math></i> , Phys. Rev. Lett. <b>80</b> (1998) 3018.	102

## 10. Scientific work:

In my diploma thesis, which I completed in 1974 under the direction of Professor S. G. Rohozinski, I investigated the properties of the collective quadrupole states of nuclei that are soft against the triaxial deformation. In 1979 I presented my PhD thesis on a self-consistent method of determination of the inertial functions within the adiabatic time-dependent Hartree-Fock-Bogolyubov method.

Since 1979 I have been working on the boson expansion methods for fermion systems. I was able to derive a general classification of the available expansions in terms of the structure of their underlying Lie algebras.

During my stay in Orsay, I collaborated with H. Flocard on an improvement of the Skyrme interaction aimed at the simultaneous correct description of the mean-field and pairing properties of nuclei. We applied the improved force in a study of nuclei near the neutron-drip line within the Hartree-Fock-Bogolyubov method.

In collaboration with S.E. Koonin, I worked at the California Institute of Technology on applications of the Monte-Carlo method to determine exact ground-state energies of many-fermion systems for a given two-body interaction.

I continued my interest in self-consistent methods during my stay in Saclay, where I worked together with P. Bonche on the spontaneous left-right symmetry breaking under fast rotation. At the same time, I came back to the boson expansion problems and derived a new method of obtaining the boson-fermion mapping through a fermion expansion of boson operators.

For many years, I have been collaborating with physicists from Orsay, Saclay, Brussels, Lyon and Livermore, working on a self-consistent description of superdeformed states in nuclei.

In collaboration with P. Haensel, I have been studying properties of neutron-star crust matter using self-consistent mean-field methods. In particular, we were interested in deriving the equation-of-state of the stellar medium at densities above the nuclear density.

My collaboration with J. Dudek (Strasbourg) aimed at a self-consistent description of nuclear rotation and exotic shapes with a particular emphasis on the properties of tetrahedral and octahedral minima.

At present, my scientific activity is focused on deriving energy density functionals that would precisely describe nuclear spectroscopic data. This project is carried out within the FIDIPRO project in Jyväskylä, and in collaboration with W. Nazarewicz and the group in Oak Ridge. In particular, we study properties of exotic nuclei far from beta stability, as well as the shell structure and pairing correlations in these nuclei.