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Employment

Chair in Theoretical Nuclear Physics

Professor
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1 Jun 2015 → 10 Sept 2025

Emeritus Professor

Professor
Physics
University of York
Heslington, York
11 Sept 2025 → present

Professor, honorary position

Univ Warsaw, University of Warsaw, Fac Phys
Poland
1 Jun 2015 → present

Adjunct Senior Scientist, honorary position

Helsinki Institute of Physics
Helsinki, Finland
1 Jan 2014 → present

Research Professor

Univ Jyvaskyla, University of Jyvaskyla, Dept Phys
Finland
1 Jan 2007 → 31 Dec 2017

Professor

Univ Warsaw, University of Warsaw, Fac Phys
Poland
1 Feb 2001 → 31 May 2015

Research output

Electromagnetic moments of ground and excited states calculated in heavy odd- N open-shell nuclei

Dobaczewski, J., Stuchbery, A. E., Danneaux, G., Nagpal, A., Sassarini, P. L. & Wibowo, H., 5 Feb 2026, In: Physical Review C. 113, 02, 24 p., 024306.

Laser spectroscopy and CP-violation sensitivity of actinium monofluoride

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L., Pastrana, F., Rothe, S., Ryssens, W., van den Borne, B., Wessolek, J. & Wilkins, S. G., 18 Dec 2025, In: Nature. 648, p. 562-568 7 p.

Quadrupole strength in isobaric triplets

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Extraction of ground-state nuclear deformations from ultrarelativistic heavy-ion collisions: Nuclear structure physics context

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Electromagnetic moments in the Sn-Gd region determined within nuclear DFT

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Reduction in Nuclear Size and Quadrupole Deformation of High-Spin Isomers of $^{127,129}\text{In}$

Vernon, A. R., Binnersley, C. L., Ruiz, R. F. G., Lynch, K. M., Miyagi, T., Billowes, J., Bissell, M. L., Cocolios, T. E., Delaroche, J. P., Dobaczewski, J., Dupuis, M., Flanagan, K. T., Gins, W., Girod, M., Georgiev, G., de Groote, R. P., Holt, J. D., Hustings, J., Koszorús, Á. & Leimbach, D. & 10 others, Libert, J., Nazarewicz, W., Neyens, G., Pillet, N., Reinhard, P.-G., Rothe, S., Sahoo, B. K., Stroberg, S. R., Wilkins, S. G. & Yordanov, D. T., 26 Jun 2025, In: Physical Review Letters. 134, 9 p., 252501.

Two-center harmonic oscillator basis for Skyrme-DFT calculations (I): formalism and Proof of Principle

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Electromagnetic properties of indium isotopes illuminate the doubly magic character of ^{100}Sn

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Opportunities for fundamental physics research with radioactive molecules

Arrowsmith-Kron, G., Athanasakis-Kaklamanakis, M., Au, M., Ballof, J., Berger, R., Borschevsky, A., Breier, A. A., Buchinger, F., Budker, D., Caldwell, L., Charles, C., Dattani, N., Groote, R. P. D., DeMille, D., Dickel, T., Dobaczewski, J., Düllmann, C. E., Eliav, E., Engel, J. & Fan, M. & 42 others, Flambaum, V., Flanagan, K. T., Gaiser, A. N., Ruiz, R. F. G., Gaul, K., Giesen, T. F., Ginges, J. S. M., Gottberg, A., Gwinner, G., Heinke, R., Hoekstra, S., Holt, J. D., Hutzler, N. R., Jayich, A., Karthein, J., Leach, K. G., Madison, K. W., Malbrunot-Ettenauer, S., Miyagi, T., Moore, I. D., Moroch, S., Navratil, P., Nazarewicz, W., Neyens, G., Norrgard, E. B., Nusgart, N., Pašteka, L. F., Petrov, A. N., Plaß, W. R., Ready, R. A., Reiter, M. P., Reponen, M., Rothe, S., Safronova, M. S., Scheidenerger, C., Shindler, A., Singh, J. T., Skripnikov, L. V., Titov, A. V., Udrescu, S.-M., Wilkins, S. G. & Yang, X., 12 Jul 2024, In: Reports on progress in physics. 87, 8, 1 p., 084301.

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A new avenue in the search for CP violation: Mössbauer spectroscopy of ^{227}Ac

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Author Correction: Characterization of the shape-staggering effect in mercury nuclei (Nature Physics, (2018), 14, 12, (1163-1167), 10.1038/s41567-018-0292-8)

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Finite-range separable pairing interaction in Cartesian coordinates

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Characterization of the shape-staggering effect in mercury nuclei

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Sato, K., Dobaczewski, J. J., Nakatsukasa, T. & Satula, W., 2015, In: JPS Conference Proceedings. 6, 020051.

Strong-interaction isospin-symmetry breaking within the density functional theory

Baczyk, P., Dobaczewski, J. J., Konieczka, M. & Satula, W., 2015, In: Acta Physica Polonica B Proceedings Supplement. 8, p. 539-544 6 p.

Pairing-induced speedup of nuclear spontaneous fission

Sadhukhan, J., Dobaczewski, J., Nazarewicz, W., Sheikh, J. A. & Baran, A., 22 Dec 2014, In: Physical Review C. 90, 5 p., 061304.

Lipkin method of particle-number restoration to higher orders

Wang, X. B., Dobaczewski, J., Kortelainen, M., Yu, L. F. & Stoitsov, M. V., 17 Jul 2014, In: Physical Review C. 90, 11 p., 014312.

Structure of Superheavy Nuclei Along Element 115 Decay Chains

Shi, Y., Ward, D. E., Carlsson, B. G., Dobaczewski, J., Nazarewicz, W., Ragnarsson, I. & Rudolph, D., 14 Jul 2014, In: Physical Review C. 90, 9 p., 014308.

Simple regularization scheme for multi-reference density functional theories

Satula, W. & Dobaczewski, J., 3 Jul 2014, In: Physical Review C. 90, 8 p., 054303.

Spectroscopic properties of nuclear Skyrme energy density functionals

Tarpanov, D., Dobaczewski, J., Toivanen, J. & Carlsson, B. G., 19 May 2014, In: Physical Review Letters. 113, 252501.

New density-independent interactions for nuclear structure calculations

Bennaceur, K., Dobaczewski, J. & Raimondi, F., 20 Mar 2014.

Rotational properties of nuclei around ^{254}No investigated using a spectroscopic-quality Skyrme energy density functional

Shi, Y., Dobaczewski, J. & Greenlees, P. T., 17 Mar 2014, In: Physical Review C. 89, 8 p., 034309.

Isospin-invariant Skyrme energy-density-functional approach with axial symmetry

Sheikh, J. A., Hinohara, N., Dobaczewski, J., Nakatsukasa, T., Nazarewicz, W. & Sato, K., 10 Mar 2014, In: Phys.Rev.C. 89, 054317.

Error Estimates of Theoretical Models: a Guide

Dobaczewski, J., Nazarewicz, W. & Reinhard, P.-G., 19 Feb 2014, In: J. Phys. G: Nucl. Part. Phys.. 41, 7, 21 p., 074001.

Charged-current neutrino and antineutrino scattering off ^{116}Cd described by Skyrme forces

Almosly, W., Carlsson, B. G., Dobaczewski, J. J., Suhonen, J., Toivanen, J., Vesely, P. & Ydrefors, E., 13 Feb 2014, In: Physical Review C. 89, 2, 16 p., 024308.

Nonlocal energy density functionals for low-energy nuclear structure

Raimondi, F., Bennaceur, K. & Dobaczewski, J., 7 Feb 2014, In: J. Phys. G: Nucl. Part. Phys.. 41, 5, 055112.

Isospin mixing within the symmetry restored density functional theory and beyond

Satula, W., Dobaczewski, J., Konieczka, M. & Nazarewicz, W., 1 Feb 2014, p. 167-180. 14 p.

Polarization corrections to single-particle energies studied within the energy-density-functional and QRPA approaches

Tarpanov, D., Toivanen, J., Dobaczewski, J. & Carlsson, B. G., 13 Jan 2014, In: Physical Review C. 89, 18 p., 014307.

Spontaneous fission lifetimes from the minimization of self-consistent collective action

Sadhukhan, J., Mazurek, K., Baran, A., Dobaczewski, J., Nazarewicz, W. & Sheikh, J. A., 10 Dec 2013, In: Physical Review C. 88, 064314.

Energy-density-functional calculations including the proton-neutron mixing

Sato, K., Dobaczewski, J., Nakatsukasa, T. & Satula, W., 2 Dec 2013, In: Physical Review C. 88, 061301.

Kerman-Onishi conditions in self-consistent tilted-axis-cranking mean-field calculations

Shi, Y., Zhang, C. L., Dobaczewski, J. & Nazarewicz, W., 1 Aug 2013, In: Physical Review C. 88, 034311.

Propagation of uncertainties in the Skyrme energy-density-functional model

Gao, Y., Dobaczewski, J., Kortelainen, M., Toivanen, J. & Tarpanov, D., 25 Jan 2013, In: Physical Review C. 87, 034324.

Giant monopole resonances and nuclear incompressibilities studied for the zero-range and separable pairing interactions
Vesely, P., Toivanen, J., Carlsson, B. G., Dobaczewski, J. J., Michel, N. & Pastore, A., 6 Aug 2012, In: Physical Review C (Nuclear Physics). 86, 2, 024303.

Excited superdeformed band in Sm142 identical to Gd146

Hackman, G., Wadsworth, R., Haslip, D. S., Clark, R. M., Dobaczewski, J., Dudek, J., Flibotte, S., Hauschild, K., Hibbert, I. M., Lee, I. Y., Mullins, S. M., Macchiavelli, A. O., Pilotte, S., Semple, A. T., Thorslund, I., Timar, J., Vaska, P., Waddington, J. C. & Walker, L., 1 Jan 1995, In: Physical Review C. 52, 5, p. R2293-R2297

Activities

Electromagnetic moments in nuclei within nuclear DFT

Dobaczewski, J. J. (Invited speaker)
29 Jun 2021

Electromagnetic moments in nuclei within nuclear DFT

Dobaczewski, J. J. (Invited speaker)
10 Jun 2021

The magnetic octupole moment of 45Sc

Dobaczewski, J. J. (Invited speaker)
19 Nov 2020

Nuclear Magnetic Moments in EDF approaches

Dobaczewski, J. J. (Invited speaker)
8 Oct 2019

Nuclear magnetic moments and time-odd properties of density functionals

Dobaczewski, J. J. (Invited speaker)
3 Sept 2019

Shape coexistence in neutron deficient mercury isotopes

Dobaczewski, J. J. (Speaker)
1 Aug 2019

Octupole deformations from DFT

Dobaczewski, J. J. (Invited speaker)
25 Jul 2019

Octupole correlations in actinides

Dobaczewski, J. J. (Invited speaker)
18 Apr 2019

More news about novel functionals

Dobaczewski, J. J. (Invited speaker)
18 Mar 2019

Physics: Nuclear Density Functional Theory for determining the properties of atomic nuclei

Dobaczewski, J. J. (Advisor)
2019 → ...

THE ATOMIC NUCLEUS: GREATER THAN THE SUM OF ITS PARTS

Dobaczewski, J. J. (Advisor)
2019 → ...

Properties of ^{229}Th within the state-of-the-art nuclear DFT calculations (progress report)

Dobaczewski, J. J. (Invited speaker)

6 Nov 2018

Isobaric Multiplet Mass Equation within nuclear Density Functional Theory

Dobaczewski, J. J. (Invited speaker)

1 Nov 2018

STFC TECHNOLOGY (External organisation)

Dobaczewski, J. J. (Member)

1 Oct 2018 → 30 Sept 2021

Computing Atomic Nuclei

Dobaczewski, J. J. (Invited speaker)

12 Sept 2018

Nuclear Density Functional Theory and its selected applications

Dobaczewski, J. J. (Invited speaker)

4 Jul 2018

Calculations of nuclear Schiff moments for atomic EDM measurements

Dobaczewski, J. J. (Invited speaker)

14 May 2018

Fission processes - a theoretical viewpoint

Dobaczewski, J. J. (Invited speaker)

11 May 2018

Search for novel nuclear density functionals

Dobaczewski, J. J. (Invited speaker)

6 Apr 2018

Nuclear Schiff and octupole moments of the actinides

Dobaczewski, J. J. (Invited speaker)

21 Feb 2018

Octupole correlations in radium and around it

Dobaczewski, J. J. (Invited speaker)

16 Jan 2018

Nuclear magnetic moments

Dobaczewski, J. J. (Invited speaker)

2 Nov 2017

STFC TECHNOLOGY (External organisation)

Dobaczewski, J. J. (Member)

1 Oct 2017 → 30 Sept 2020

DFT nuclear magnetic moments

Dobaczewski, J. J. (Invited speaker)

26 Sept 2017

Recent progress in building novel nonlocal energy density functionals

Dobaczewski, J. J. (Invited speaker)
5 Sept 2017

Approximate symmetry restoration correction at the SR level with the Lipkin method

Dobaczewski, J. J. (Invited speaker)
28 Feb 2017

Strong-force isospin-symmetry breaking in masses of N~Z nuclei

Dobaczewski, J. J. (Invited speaker)
2 Feb 2017

Journal of physics g-Nuclear and particle physics (Journal)

Dobaczewski, J. J. (Editor in chief)
1 Jan 2017 → 31 Dec 2019

Nuclear energy density functionals generated by higher-order finite-range pseudopotentials

Dobaczewski, J. J. (Invited speaker)
8 Nov 2016

Regularized finite-range DFT generators with pairing

Dobaczewski, J. J. (Invited speaker)
2 Nov 2016

Density Functional Theory and Self-Consistent Methods

Dobaczewski, J. J. (Invited speaker)
18 Jul 2016 → 6 Aug 2016

Density Functionals for Heavy and Superheavy Nuclei

Dobaczewski, J. J. (Invited speaker)
1 Jun 2016

Novel energy density functionals for low-energy nuclear phenomena

Dobaczewski, J. J. (Invited speaker)
31 Mar 2016

Isospin and angular-momentum projection plus configuration interaction

Dobaczewski, J. J. (Invited speaker)
2 Dec 2015

Novel nuclear energy density functionals

Dobaczewski, J. J. (Invited speaker)
4 Nov 2015

Nuclear structure with novel non-local density functionals

Dobaczewski, J. J. (Invited speaker)
20 Oct 2015

Coupling of single-particle motion to nuclear vibrations

Dobaczewski, J. J. (Invited speaker)
15 Sept 2015

Nuclear Structure

Dobaczewski, J. J. (Invited speaker)
25 Aug 2015 → 27 Aug 2015

New developments in nuclear DFT
Dobaczewski, J. J. (Invited speaker)
29 Jul 2015

New ideas for building nuclear energy density functionals
Dobaczewski, J. J. (Invited speaker)
3 Jul 2015

Journal of physics g-Nuclear and particle physics (Journal)
Dobaczewski, J. J. (Editor)
1 Jan 2014 → 31 Dec 2016

Neutron Time-of-flight Committee (INTC) (External organisation)
Dobaczewski, J. J. (Advisor)
1 Jan 2013 → 31 Dec 2016

Computer Physics Communications (Journal)
Dobaczewski, J. J. (Editor)
2011 → 2013

Training in Advanced Low Energy Nuclear Theory (TALENT) (External organisation)
Dobaczewski, J. J. (Member)
2011 → ...

Belgian FNRS Commission des Sciences Exactes et Naturelles
Dobaczewski, J. J. (Advisor)
1 Jan 2010 → ...

STFC TECHNOLOGY (External organisation)
Dobaczewski, J. J. (Advisor)
1 Jan 2008 → 31 Dec 2018

Journal of physics g-Nuclear and particle physics (Journal)
Dobaczewski, J. J. (Editorial board member)
2008 → 2013

European Physical Journal A : Hadrons and Nuclei (Journal)
Dobaczewski, J. J. (Reviewer)
2007 → ...

Physical Review C - Nuclear Physics (Journal)
Dobaczewski, J. J. (Editorial board member)
2006 → 2008

Nature (Journal)
Dobaczewski, J. J. (Reviewer)
2005 → ...

Nuclear Physics A (Journal)
Dobaczewski, J. J. (Editorial board member)
1 Mar 2000 → 31 Dec 2016

Computer Physics Communications (Journal)

Dobaczewski, J. J. (Reviewer)

1998 → ...

Physical Review Letters (Journal)

Dobaczewski, J. J. (Reviewer)

1990 → ...

Physical Review C - Nuclear Physics (Journal)

Dobaczewski, J. J. (Reviewer)

1989 → ...

Physics Letters B : Particle Physics, Nuclear Physics and Cosmology (Journal)

Dobaczewski, J. J. (Reviewer)

1987 → ...

Journal of physics g-Nuclear and particle physics (Journal)

Dobaczewski, J. J. (Reviewer)

1985 → ...

Prizes

honorary degree awarded by the Claude Bernard Lyon 1 University

Dobaczewski, J. J. (Recipient), 20 Nov 2017

Wojciech Rubinowicz scientific prize

Dobaczewski, J. J. (Recipient), 7 Sept 2015

Awards

Nuclear Physics Consolidated Grant 2024-2027

JENKINS, D. (Principal investigator), ANDREYEV, A. (Co-investigator), BASHKANOV, M. (Co-investigator), BENTLEY, M. (Co-investigator), DIGET, C. A. (Co-investigator), DOBACZEWSKI, J. J. (Co-investigator), LAIRD, A. M. (Co-investigator), PASCHALIS, S. (Co-investigator), Petri, M. K. (Co-investigator), WADSWORTH, B. (Co-investigator), WATTS, D. (Co-investigator) & ZACHARIOU, N. (Co-investigator)

SCIENCE AND TECHNOLOGY FACILITIES COUNCIL (STFC): £3,345,293.60

1/10/24 → 30/09/27

Projects

MeVQE: A World-leading Centre for MeV Scale Entanglement Physics

WATTS, D. (Principal investigator), BASHKANOV, M. (Co-investigator), D'AMICO, I. (Co-investigator), DOBACZEWSKI, J. J. (Co-investigator), JENKINS, D. (Co-investigator) & ZACHARIOU, N. (Co-investigator)

SCIENCE AND TECHNOLOGY FACILITIES COUNCIL (STFC)

1/09/22 → 31/08/24

Nuclear Physics Consolidated Grant

JENKINS, D. (Principal investigator), ANDREYEV, A. (Co-investigator), BENTLEY, M. (Co-investigator), DIGET, C. A. (Co-investigator), DOBACZEWSKI, J. J. (Co-investigator), FULTON, B. R. (Co-investigator), LAIRD, A. M. (Co-investigator), PASCHALIS, S. (Co-investigator), PASTORE, A. (Co-investigator), Petri, M. K. (Co-investigator) & WADSWORTH, B. (Co-investigator)

SCIENCE AND TECHNOLOGY FACILITIES COUNCIL (STFC)

1/10/17 → 30/09/22

Nuclear Physics Consolidated Grant 2021-2024

JENKINS, D. (Principal investigator), ANDREYEV, A. (Co-investigator), BASHKANOV, M. (Co-investigator), BENTLEY, M. (Co-investigator), DOBACZEWSKI, J. J. (Co-investigator), LAIRD, A. M. (Co-investigator), PASCHALIS, S. (Co-investigator), PASTORE, A. (Co-investigator), Petri, M. K. (Co-investigator), WADSWORTH, B. (Co-investigator),

WATTS, D. (Co-investigator) & ZACHARIOU, N. (Co-investigator)
SCIENCE AND TECHNOLOGY FACILITIES COUNCIL (STFC)
1/10/21 → 31/03/25

Nuclear Physics Consolidated Grant 2024-2027

JENKINS, D. (Principal investigator), ANDREYEV, A. (Co-investigator), BASHKANOV, M. (Co-investigator), BENTLEY, M. (Co-investigator), DIGET, C. A. (Co-investigator), DOBACZEWSKI, J. J. (Co-investigator), LAIRD, A. M. (Co-investigator), PASCHALIS, S. (Co-investigator), Petri, M. K. (Co-investigator), WADSWORTH, B. (Co-investigator), WATTS, D. (Co-investigator) & ZACHARIOU, N. (Co-investigator)
SCIENCE AND TECHNOLOGY FACILITIES COUNCIL (STFC)
1/10/24 → 30/09/27

Nuclear Physics Theory

DOBACZEWSKI, J. J. (Principal investigator) & PASTORE, A. (Principal investigator)
SCIENCE AND TECHNOLOGY FACILITIES COUNCIL (STFC)
1/06/15 → 31/03/20

Symmetry-restored two-centre self-consistent approach to fission with arbitrary deformations, orientations, and distance of fragments

DOBACZEWSKI, J. J. (Principal investigator) & Sanchez Fernandez, A. (Researcher)
1/01/22 → 31/12/23