Alexandros Gezerlis

CONTACT INFORMATION

Department of Physics
University of Guelph
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`http://www.physics.uoguelph.ca/~gezerlis`

EMPLOYMENT

Assistant/Associate/Full Professor *2013/2017/2022*
Department of Physics, University of Guelph, Guelph, ON

Senior Postdoc and Herzberg Fellow *05/2012 to 07/2013*
EMMI & Technische Universität Darmstadt, Darmstadt, Germany

Research Associate *08/2009 to 05/2012*
Department of Physics, University of Washington, Seattle, WA

Graduate Research Assistant *05/2006 to 08/2009*
Theoretical Division, Los Alamos National Laboratory, Los Alamos, NM

Graduate Teaching & Research Assistant *08/2003 to 05/2006*
Department of Physics, University of Illinois at Urbana-Champaign, Urbana, IL

EDUCATION

Ph.D. in Physics *07/2009*
University of Illinois at Urbana-Champaign, Urbana, IL
Thesis topic: Microscopic Simulations of Strongly Paired Fermions

M.S. in Physics *05/2005*
University of Illinois at Urbana-Champaign, Urbana, IL

Diploma in Electrical and Computer Engineering *07/2003*
National Technical University of Athens, Athens, Greece
Thesis topic: The Two-Dimensional Electron Gas

HONORS AND AWARDS

Outstanding Referee *2024*
Physical Review journals, American Physical Society

Research Excellence Award *2017*
$10,000 – Office of Research & Office of the Provost, University of Guelph, Guelph, ON

Early Researcher Award *2017-2022*
$150,000 – Ministry of Research, Innovation and Science, Government of Ontario

NSERC Discovery Accelerator Supplement *2016-2019*
$120,000 – Natural Sciences and Engineering Research Council of Canada

Inaugural Herzberg Fellow *2013*
Institut für Kernphysik, Technische Universität Darmstadt, Darmstadt, Germany

Inducted into The Honor Society of Phi Kappa Phi *2007*
University of Illinois at Urbana-Champaign Chapter, Urbana, IL

Jordan S. Asketh Award *2005*
Department of Physics, University of Illinois at Urbana-Champaign, Urbana, IL

Incomplete List of Teachers Ranked as Excellent by their Students (Ranked Outstanding in 2003) *2003/2004*
University of Illinois at Urbana-Champaign, Urbana, IL

Grants and Allocations

Exploring neutron stars using computer simulations *2021*
$455,000 – Canada Foundation for Innovation - Ontario Research Fund

NSERC Discovery Grant *2021-2026*
$400,000 – From nuclear forces to novel states of matter

NSERC Discovery Grant *2016-2021*
$250,000 – Strongly interacting nucleons: from few to many

High-performance computing facility for research in nuclear theory *2013*
$309,000 – Canada Foundation for Innovation - Ontario Research Fund

NSERC Discovery Grant *2013-2016*
$120,000 – Strong Interactions In Nuclear Physics

Principal Investigator *2010-*
Microscopic fermionic simulations: from cold atoms to nuclei and neutron stars
∼2M CPU hours/year at US National Energy Research Scientific Computing Center

co-Principal Investigator *2012-2015*
Quantum Monte Carlo for Strong Interactions
600K + 1.2M + 4.2M + 4.2M CPU hours at the Jülich Supercomputing Center

Professional Service

Committee member
- *NSERC Subatomic Physics Evaluation Section* *2022-2025*
- *CINP Nuclear Theory Scientific Working Group (Chair)* *2021-*
- *IPP/CINP NDRIO White Paper* *2020*
- *CINP Summer Research Fellowhship* *2020*
- *CAP DNP PhD Thesis Prize* *2018*
- *NSERC TITAN Expert Review* *2017*

External Reviewer
- *Cambridge University Press* *2022/3/4*
- *UK STFC grant/fellowhip proposals* *2020-3*
- *European Research Council (ERC) grant proposals* *2020*
- *US DoE ASCR Leadership Computing Challenge (ALCC)* *2017-8, 20*
- *Partnership for Advanced Computing in Europe (PRACE)* *2016-7*
- *National Science Centre (Poland)* *2013,7*
- *FNRS (Belgium)* *2015-6*
- *CRC Press* *2014,20*

Referee for *Nature Physics*, *Physical Review X*, *Physical Review Letters*, *Physics Letters B*, *Physical Review C*, *Physical Review A*, *European Physical Journal A*, *Frontiers in Physics*, *Journal of Low Temperature Physics*, *International Journal of Modern Physics E*

Habilitation Examiner *for 1 candidate (Saclay)*, **PhD Examiner** *for 9 candidates (Guelph, Milano, UBC, Yale), and* **MSc Examiner** *for 2 candidates (Guelph, UVic)*

Guest Editor for Theme Issue of *Philosophical Transactions A* *2024*

Conference Organizing

Co-organizer of the ECT* workshop *Connections between cold atoms and nuclear matter: From low to high energies* — *2022*

Lead organizer of the ECT* workshop *Nuclear physics meets condensed matter: symmetry, topology, and gauge* — *2021*

Lead organizer of ECT* workshop *Exploring nuclear physics with ultracold atoms* — *2018*

Co-organizer of the IPN Orsay workshop *Bridging nuclear ab initio and energy-density-functional theories* — *2017*

Co-organizer of the *53rd Winter Nuclear and Particle Physics Conference* — *2016*

Lead organizer of the *2015 TRIUMF Summer Institute* — *2015*

Conference Chair of the *52nd Winter Nuclear and Particle Physics Conference* — *2015*

Lead organizer of the ECT* workshop (with H4F support) *Three-Body Forces: from Matter to Nuclei* — *2014*

Co-organizer of the 10-week INT Program *Fermions From Cold Atoms To Neutron Stars* — *2011*

Book

Numerical Methods in Physics with Python
Available in both hardcover and paperback
(1st edition, Cambridge University Press, 2020, 606 pages)
(2nd edition, Cambridge University Press, 2023, 704 pages)

Refereed Journal Publications

(Underlining names of students and postdocs under my supervision)

1. *Spin-Triplet Pairing in Heavy Nuclei is Stable Against Deformation*
   Georgios Palkanoglou, Michael Stuck, and Alexandros Gezerlis
   arXiv:2402.13313

2. *Auxiliary Field Quantum Monte Carlo for Dilute Neutrons on the Lattice*
   Ryan Curry, Jayani Dissanayake, Stefano Gandolfi, and Alexandros Gezerlis
   to appear in Philosophical Transactions A
   arXiv:2310.01504

3. *Second-Order Perturbation Theory in Continuum Quantum Monte Carlo Calculations*
   Ryan Curry, Joel E. Lynn, Kevin E. Schmidt, and Alexandros Gezerlis
   Phys. Rev. Research **5**, L042021 (2023)
   arXiv:2302.07285

4. *Six textbook mistakes in data analysis*
   Alexandros Gezerlis and Martin Williams
   Eur. Phys. J. Plus **138**, 19 (2023)
   arXiv:2209.09073

5. *The $^1S_0$ pairing gap in neutron matter*
   S. Gandolfi, G. Palkanoglou, J. Carlson, A. Gezerlis, and K. E. Schmidt
   Condens. Matter **7**, 19 (2022)
   arXiv:2201.01308

6. *Skyrme-based extrapolation for the static response of neutron matter*
   Mateusz Buraczynski, Samuel Martinello, and Alexandros Gezerlis
   Phys. Rev. C **105**, 025807 (2022)
   arXiv:2111.08056

7. *Machine-learning approach to finite-size effects in systems with strongly interacting fermions*
   Nawar Ismail and Alexandros Gezerlis
   Phys. Rev. C **104**, 055802 (2021)
   arXiv:2107.03330

8. *Superfluid neutron matter with a twist*
   Georgios Palkanoglou and Alexandros Gezerlis
   Universe **7**, 24 (2021)
   arXiv:2012.04663
   * Marked as a Feature Paper.

9. *Satisfying the compressibility sum rule in neutron matter*
   Mateusz Buraczynski, Samuel Martinello, and Alexandros Gezerlis
   Phys. Lett. B **818**, 136347 (2021)
   arXiv:2007.06589

10. *Six textbook mistakes in computational physics*
    Alexandros Gezerlis and Martin Williams
    Am. J. Phys. **89**, 51 (2021)
    arXiv:2006.08592

11. *From odd-even staggering to the pairing gap in neutron matter*
    Georgios Palkanoglou, Fotis K. Diakonos, and Alexandros Gezerlis
    Phys. Rev. C **102**, 064324 (2020)
    arXiv:2005.05985

12. *Pairing in two-dimensional Fermi gases with a coordinate-space potential*
    Tash Zielinski, Bernard Ross, Alexandros Gezerlis
    Phys. Rev. A **101**, 033601 (2020)
    arXiv:1908.04782

13. *Clustering of Four-Component Unitary Fermions*
    William G. Dawkins, J. Carlson, U. van Kolck, Alexandros Gezerlis
    Phys. Rev. Lett. **124**, 143402 (2020)
    arXiv:1908.04288

14. *Neutron matter at the interface(s): Static response and effective mass*
    Mateusz Buraczynski, Nawar Ismail, and Alexandros Gezerlis
    Eur. Phys. J. A **56**, 112 (2020)
    arXiv:1906.01674

15. *Non-perturbative Extraction of the Effective Mass in Neutron Matter*
    Mateusz Buraczynski, Nawar Ismail, and Alexandros Gezerlis
    Phys. Rev. Lett. **122**, 152701 (2019)
    arXiv:1901.00870

16. *Symmetry restoration in mixed-spin paired heavy nuclei*
Ermal Rrapaj, A. O. Macchiavelli, and Alexandros Gezerlis
Phys. Rev. C **99**, 014321 (2019)
arXiv:1807.09294

17. *Path Integral Monte Carlo study of particles obeying quantum mechanics and classical statistics*
William G. Dawkins and Alexandros Gezerlis
Phys. Rev. A **96**, 043619 (2017)
arXiv:1707.01113

18. *Quantum Monte Carlo calculations of light nuclei with local chiral two- and three-nucleon interactions*
J. E. Lynn, I. Tews, J. Carlson, S. Gandolfi, A. Gezerlis, K. E. Schmidt, A. Schwenk
Phys. Rev. C **96**, 054007 (2017)
arXiv:1706.07668
* Marked as an Editors' Suggestion.

19. *Fermions in Two Dimensions: Scattering and Many-Body Properties*
Alexander Galea, Tash Zielinski, Stefano Gandolfi, and Alexandros Gezerlis
J Low Temp Phys **189**, 451 (2017)
arXiv:1705.09310

20. Ab initio *and phenomenological studies of the static response of neutron matter*
Mateusz Buraczynski and Alexandros Gezerlis
Phys. Rev. C **95**, 044309 (2017)
arXiv:1608.03598

21. *Quantum Monte Carlo calculations of two neutrons in finite volume*
P. Klos, J. E. Lynn, I. Tews, S. Gandolfi, A. Gezerlis, H.-W. Hammer, M. Hoferichter, and A. Schwenk
Phys. Rev. C **94**, 054005 (2016)
arXiv:1604.01387

22. *Diffusion Monte Carlo study of strongly interacting 2D Fermi gases*
Alexander Galea, Hillary Dawkins, Stefano Gandolfi, and Alexandros Gezerlis
Phys. Rev. A **93**, 023602 (2016)
arXiv:1511.05123

23. *Static Response of Neutron Matter*
Mateusz Buraczynski and Alexandros Gezerlis
Phys. Rev. Lett. **116**, 152501 (2016)
arXiv:1510.06417

24. *Probing mixed-spin pairing in heavy nuclei*
Brendan Bulthuis and Alexandros Gezerlis
Phys. Rev. C **93**, 014312 (2016)
arXiv:1509.04295

25. *Chiral Three-Nucleon Interactions in Light Nuclei, Neutron-α Scattering, and Neutron Matter*
J. E. Lynn, I. Tews, J. Carlson, S. Gandolfi, A. Gezerlis, K. E. Schmidt, A. Schwenk

Phys. Rev. Lett. **116**, 062501 (2016)
arXiv:1509.03470

26. *Quantum Monte Carlo calculations of neutron matter with chiral three-body forces*
I. Tews, S. Gandolfi, A. Gezerlis, and A. Schwenk
Phys. Rev. C **93**, 024305 (2016)
arXiv:1507.05561

27. *Neutron Matter from Low to High Density*
Stefano Gandolfi, Alexandros Gezerlis, and J. Carlson
Ann. Rev. Nucl. Part. Sci. **65**, 303 (2015)
arXiv:1501.05675

28. *Quantum Monte Carlo calculations of light nuclei using chiral potentials*
J. E. Lynn, J. Carlson, E. Epelbaum, S. Gandolfi, A. Gezerlis, A. Schwenk
Phys. Rev. Lett. **113**, 192501 (2014)
arXiv:1406.2787

29. *Local chiral effective field theory interactions and quantum Monte Carlo applications*
A. Gezerlis, I. Tews, E. Epelbaum, M. Freunek, S. Gandolfi, K. Hebeler, A. Nogga, A. Schwenk
Phys. Rev. C **90**, 054323 (2014)
arXiv:1406.0454

30. *The neutron polaron as a constraint on nuclear density functionals*
M. M. Forbes, A. Gezerlis, K. Hebeler, T. Lesinski, A. Schwenk
Phys. Rev. C **89**, 041301(R) (2014)
arXiv:1308.1691

31. *Quantum Monte Carlo Calculations with Chiral Effective Field Theory Interactions*
A. Gezerlis, I. Tews, E. Epelbaum, S. Gandolfi, K. Hebeler, A. Nogga, A. Schwenk
Phys. Rev. Lett. **111**, 032501 (2013)
arXiv:1303.6243

32. *Quantum Monte Carlo Approaches to Nuclear and Atomic Physics*
J. Carlson, Stefano Gandolfi, and Alexandros Gezerlis
Prog. Theor. Exp. Phys. 01A209 (2012)
arXiv:1210.6659

33. *Effective-Range Dependence of Resonantly Interacting Fermions*
Michael McNeil Forbes, Stefano Gandolfi, and Alexandros Gezerlis
Phys. Rev. A **86**, 053603 (2012)
arXiv:1205.4815

34. *Energy spectrum and effective mass using a non-local 3-body interaction*
Alexandros Gezerlis and G. F. Bertsch
Phys. Rev. C **85**, 037303 (2012)
arXiv:1111.2083
* Selected for publication in the *Virtual Journal of Atomic Quantum Fluids* **4**, Issue 4 (2012).

35. *Phase separation in low-density neutron matter*
Alexandros Gezerlis and Rishi Sharma
Phys. Rev. C **85**, 015806 (2012)
arXiv:1111.0298

36. *Mixed-spin pairing condensates in heavy nuclei*
Alexandros Gezerlis, G. F. Bertsch, and Y. L. Luo
Phys. Rev. Lett. **106**, 252502 (2011)
arXiv:1103.5793
* Marked as an Editors' Suggestion.
* Highlighted in an APS Physics Synopsis.

37. *Spin-polarized low-density neutron matter*
Alexandros Gezerlis
Phys. Rev. C **83**, 065801 (2011)
arXiv:1012.4464

38. *Resonantly Interacting Fermions In A Box*
Michael McNeil Forbes, Stefano Gandolfi, and Alexandros Gezerlis
Phys. Rev. Lett. **106**, 235303 (2011)
arXiv:1011.2197
* Selected for publication in the *Virtual Journal of Atomic Quantum Fluids* **3**, Issue 7 (2011).

39. *Effective 3-body interaction for mean-field and density-functional theory*
Alexandros Gezerlis and G. F. Bertsch
Phys. Rev. Lett. **105**, 212501 (2010)
arXiv:1008.4130

40. *Low-Density Neutron Matter*
Alexandros Gezerlis and J. Carlson
Phys. Rev. C **81**, 025803 (2010)
arXiv:0911.3907

41. *Heavy-Light Fermion Mixtures at Unitarity*
Alexandros Gezerlis, S. Gandolfi, K. E. Schmidt, and J. Carlson
Phys. Rev. Lett. **103**, 060403 (2009)
arXiv:0901.3148
* Selected for publication in the *Virtual Journal of Atomic Quantum Fluids* **1**, Issue 3 (2009).

42. *Strongly paired fermions: Cold atoms and neutron matter*
Alexandros Gezerlis and J. Carlson
Phys. Rev. C **77**, 032801(R) (2008)
arXiv:0711.3006

Invited Book Chapters

1. *Pairing and superfluidity of nucleons in neutron stars*
A. Gezerlis, C. J. Pethick, and A. Schwenk
in "Novel Superfluids: Volume 2", edited by K.-H. Bennemann and J. B. Ketterson
(Oxford University Press, 2014)
arXiv:1406.6109

2. *Superfluid Pairing in Neutrons and Cold Atoms*
   J. Carlson, S. Gandolfi, and Alexandros Gezerlis
   in "50 Years of Nuclear BCS", edited by R. A. Broglia and V. Zelevinsky
   (World Scientific, 2013)
   arXiv:1204.2596

3. *Terrestrial and Astrophysical Superfluidity: Cold Atoms and Neutron Matter*
   Alexandros Gezerlis and J. Carlson
   in "The Neutron Star Crust", edited by C. A. Bertulani and J. Piekarewicz
   (Nova Publishers, 2012)
   arXiv:1109.4946

Conference Proceedings

1. *Effective mass and pairing gap in neutron matter*
   G. Palkanoglou, M. Buraczynski, N. Ismail, and A. Gezerlis
   proceedings of "27th International Nuclear Physics Conference (INPC 2019)."
   J. Phys. Conf. Ser. **1643**, 012132 (2020)

2. *Exploring finite-size effects in strongly correlated systems*
   M. Buraczynski, W. Dawkins, N. Ismail, and A. Gezerlis
   proceedings of "6th International Conference on New Frontiers in Physics (ICNFP 2017)."
   EPJ Web of Conferences **182**, 02044 (2018)

3. *Neutron matter with Quantum Monte Carlo: chiral 3N forces and static response*
   M. Buraczynski, S. Gandolfi, A. Gezerlis, A. Schwenk and I. Tews
   proceedings of "XVIII International Conference on Recent Progress in Many-Body Theories"
   J. Phys. Conf. Ser. **702**, 012014 (2016)

4. *The strong interaction at neutron-rich extremes*
   A. Gezerlis, K. Hebeler, J. D. Holt, J. Menendez, A. Schwenk, J. Simonis, and I. Tews
   proceedings of "NIC Symposium 2016"

5. *Chiral 2N and 3N interactions and quantum Monte Carlo applications*
   Alexandros Gezerlis
   proceedings of "21st International Conference on Few-Body Problems in Physics"
   EPJ Web of Conferences **113**, 06019 (2016)

6. *Neutron matter with chiral EFT interactions: Perturbative and first QMC calculations*
   I. Tews, T. Krüger, A. Gezerlis, K. Hebeler, A. Schwenk
   proceedings of "International Conference on Nuclear Theory in the Supercomputing Era 2013"
   arXiv:1310.3643

7. *Unbalanced low-density neutron matter*
   Alexandros Gezerlis and Rishi Sharma
   proceedings of "Xth Conference Quark Confinement and the Hadron Spectrum"
   PoS(Confinement X)257 (2012)
   arXiv:1302.2396

8. *Polarization in low-density neutrons*
   Alexandros Gezerlis
   in "Proceedings of the "FAIRNESS 2012 Workshop"

J. Phys. Conf. Ser. **426**, 12011 (2013)

9. *Polarized pairing in neutron star crusts*
   Alexandros Gezerlis
   in "19th Particles & Nuclei International Conference (PANIC11)"
   AIP Conf. Proc. 1441, 390 (2012)

10. *Strongly Coupled Fermions in Nature and the Laboratory*
    J. Carlson, Alexandros Gezerlis, and Sanjay Reddy
    proceedings of "8th Conference Quark Confinement and the Hadron Spectrum"
    PoS(Confinement8)145 (2008)

11. *Equation of State and Pairing Gaps in Cold Atoms and Low-Density Neutron Matter*
    J. Carlson, Alexandros Gezerlis, and Sanjay Reddy
    in "Nuclei and Mesoscopic Physics", Edited by P. Danielewicz, P. Piecuch and V. Zelevinsky (Springer-Verlag, Berlin, 2008)
    AIP Conf. Proc. 995, 17 (2008)

Public Lectures & Summer Schools

Nuclear astrophysics — *07/2023*
Two lectures at 2023 National Nuclear Physics Summer School (NNPSS)
University of California, Riverside

From probabilistic foundations ton nuclear quantum Monte Carlo — *06/2023*
Four lectures at Yonsei University, Seoul, South Korea

Renormalization from scratch/From QFT to nuclear froces/From nuclear forces to nuclear structure and nuclear astrophysics — *03/2022*
Three lectures at the STFC Summer School in Nuclear Physics
University of Sheffield, Sheffield, UK

Introductory nuclear structure/Renormalization from scratch/From nuclear forces to nuclear structure — *08/2019*
Three lectures at the 75th SUSSP and 20th STFC Summer School in Nuclear Physics and its Applications
University of St Andrews, St Andrews, UK

If you wish to make a neutron star from scratch... — *04/2018*
"Guelph Talks Research" Series Public Lecture
Gueph, ON

Renormalization from scratch/Quantum Monte Carlo with chiral Effective Field Theory interactions — *07/2016*
Two lectures at the TALENT Course on Quantum Monte Carlo
North Carolina State University, Raleigh, NC

From cold atoms to neutron stars and back — *03/2014*
Astronomy Club Public Lecture
University of Guelph, Guelph, ON, Canada

Strongly Paired Fermions / From QED to EFT and from there to QMC — *07/2013*
Two lectures at the TALENT/INT Course on Nuclear forces and their impact on structure, reactions and astrophysics
Institute for Nuclear Theory, University of Washington, Seattle, WA

Invited Talks

Nuclear forces, ab initio, and phenomenology — *12/2023*
Institute of Nuclear & Particle Physics Colloquium, NCSR Demokritos, Athens, Greece

Order-by-order convergence of chiral nuclear forces in neutron matter — *09/2023*
NuSym23, XIth International Symposium on Nuclear Symmetry Energy
GSI, Darmstadt, Germany

Nuclear forces, ab initio, and phenomenology — *06/2023*
T-2 Seminar
Theoretical Division, Los Alamos National Laboratory, Los Alamos, NM

Perturbation theory in continuum quantum Monte Carlo — *02/2023*
Progress in Ab Initio Techniques in Nuclear Physics Workshop
TRIUMF, Vancouver, BC, Canada

Mixed-spin pairing in heavy nuclei — *02/2023*
IJCLab Orsay, France

From Alpha Clustering to Homogeneous Matter — *06/2021*
2021 CAP Virtual Congress

From Alpha Clustering to Infinite Matter — *04/2020*
TRIUMF (Virtual) Colloquium

From Alpha Clustering to Homogeneous Matter — *10/2019*
Nuclear Theory Seminar
NSCL, Michigan State University, East Lansing, MI

Particle-number projection in HFB and BCS: from heavy nuclei to neutron matter — *09/2019*
Recent advances on proton-neutron pairing Workshop
CEA Saclay, France

Effective mass and pairing gap in neutron matter — *08/2019*
27th International Nuclear Physics Conference (INPC 2019)
Glasgow, UK

From alpha clustering to homogeneous matter — *07/2019*
Ab initio nuclear theory workshop: from breakthroughs to applications
University of Surrey, UK

From Alpha Clustering to Homogeneous Nucleonic Matter — *05/2019*
Theory Canada XIV
University of British Columbia, Vancouver, BC, Canada

From Alpha Clustering to Homogeneous Matter — *04/2019*
Cyclotron Colloquium
Texas A&M University, College Station, TX

Simplified microscopic and effective interactions in Quantum Monte Carlo — *02/2019*
Progress in Ab Initio Techniques in Nuclear Physics Workshop
TRIUMF, Vancouver, BC, Canada

Strongly interacting nucleons: from few to many — *10/2018*
Nuclear & Particle Physics Seminar
Universidad de los Andes, Bogotá, Colombia

From neutrons to atoms (in 2D) and back *06/2018*
ECT* Workshop on "Exploring nuclear physics with ultracold atoms"
European Centre for Theoretical Studies in Nuclear Physics and Related Areas, Trento, Italy

From microscopic to effective interactions via Quantum Monte Carlo *06/2018*
ECT* Workshop on "New ideas in constraining nuclear forces"
European Centre for Theoretical Studies in Nuclear Physics and Related Areas, Trento, Italy

Local chiral and pionless EFT: the view from Quantum Monte Carlo *04/2018*
Workshop on "EFTs and ab initio methods"
Chengdu, China

Quantum Monte Carlo calculations of neutron-rich matter *10/2017*
Workshop on "Bridging nuclear ab initio and energy-density-functional theories"
IPN Orsay, France

Strongly interacting matter in neutron stars *08/2017*
6th International Conference on New Frontiers in Physics
Kolymbari, Crete, Greece

Novel states in compact stars and nuclei *07/2017*
TRIUMF Science Week
Vancouver, BC

Strongly interacting nucleons: from few to many *04/2017*
T-2 Seminar
Theoretical Division, Los Alamos National Laboratory, Los Alamos, NM

Pairing from cold atoms to neutron stars and heavy nuclei *03/2017*
ECT* Workshop "Superfluidity and Pairing Phenomena Workshop"
European Centre for Theoretical Studies in Nuclear Physics and Related Areas, Trento, Italy

Ab initio theories for light nuclei and neutron stars *10/2016*
2016 Fall Meeting of the APS Division of Nuclear Physics
Vancouver, BC

Pairing from cold atoms to neutron stars and heavy nuclei *09/2016*
ECT* Workshop "Proton-neutron pairing and alpha-like quartet correlations in nuclei"
European Centre for Theoretical Studies in Nuclear Physics and Related Areas, Trento, Italy

What can cold atoms teach us about neutron stars? *09/2016*
University of Athens, Department of Nuclear & Particle Physics Seminar
Athens, Greece

Strongly interacting neutrons: from few to many *06/2016*
Nuclear Physics Seminar
University of York, York, UK

Strongly interacting nucleons: from few to many *05/2016*
Nuclear Physics from Lattice QCD Program
Institute for Nuclear Theory, University of Washington, Seattle, WA

Static response of neutron matter *05/2016*
ECT* Workshop "Advances in transport and response properties of strongly interacting systems"
European Centre for Theoretical Studies in Nuclear Physics and Related Areas, Trento, Italy

What can cold atoms teach us about neutron stars? *04/2016*
University of Toronto Quantum Optics and Condensed Matter Physics Seminar
Toronto, ON

Pairing in 2D cold atoms, heavy nuclei, and neutron stars *03/2016*
Physics at the Falls Workshop on: Pairing Phenomena from Neutron Stars to Cold Gases
Buffalo, NY

Strongly interacting nucleons: from few to many *11/2015*
Lawrence Berkeley National Lab Nuclear Physics Forum
Berkeley, CA

Quantum Monte Carlo with chiral nuclear interactions *08/2015*
XVIII International Conference on Recent Progress in Many-Body Theories
Niagara Falls, NY

Chiral (N)NN interactions with Quantum Monte Carlo *07/2015*
ECT* Workshop "Lattice Nuclei Nuclear physics and QCD"
European Centre for Theoretical Studies in Nuclear Physics and Related Areas, Trento, Italy

Nuclear-theory constraints on the equation of state of dense matter *06/2015*
The Neutron Star Radius, And All That Jazz Workshop
Montreal, Quebec, Canada

Chiral 2N and 3N interactions and quantum Monte Carlo applications *05/2015*
21st International Conference on Few-body Problems in Physics
Chicago, IL

From nuclear forces to nuclear structure *05/2015*
Active Targets and TPC for Nuclear Physics Experiments
Michigan State University, East Lansing, MI

Quantum Monte Carlo calculations with chiral two- and three-nucleon forces *05/2015*
ICNT Workshop on Theory for open-shell nuclei near the limits of stability
Michigan State University, East Lansing, MI

Quantum Monte Carlo calculations with chiral two- and three-nucleon forces *02/2015*
Progress in Ab Initio Techniques in Nuclear Physics Workshop
TRIUMF, Vancouver, BC, Canada

Microscopic simulations with modern nuclear forces *11/2014*
Theory Seminar
Nuclear Theory Group, NSCL, Michigan State University, East Lansing, MI

Quantum Monte Carlo with chiral Effective Field Theory Interactions *10/2014*
Physics Division Seminar
Argonne National Laboratory, Argonne, IL

Microscopic simulations with modern nuclear forces *07/2014*
Nuclear Structure 2014 conference
Vancouver, BC

Microscopic simulations with modern nuclear forces *06/2014*
2014 CAP Congress
Sudbury, ON

Local chiral Effective Field Theory interactions and applications *06/2014*
ICNT Workshop on "Physics of exotic nuclei"
RIKEN, Japan

Determining the equation of state via microscopic simulations *04/2014*
APS April Meeting
Savannah, GA

Quantum Monte Carlo with Chiral Effective Field Theory Interactions: An Update *02/2014*
Nuclear Structure & Reactions Workshop
TRIUMF, Vancouver, BC, Canada

Microscopic Simulations in Nuclear Physics: From QCD to EFT and from there to QMC *02/2014*
51st Winter Nuclear Particle Physics Conference
Banff, AB, Canada

Microscopic Simulations in Nuclear Physics: From QCD to EFT and from there to QMC *12/2013*
TRIUMF Colloquium
TRIUMF, Vancouver, BC, Canada

Microscopic Simulations in Nuclear Physics: From QCD to EFT and from there to QMC *10/2013*
Theory Seminar
Nuclear Theory Group, NSCL, Michigan State University, East Lansing, MI

Quantum Monte Carlo with Chiral Effective Field Theory Interactions: From matter to nuclei *10/2013*
ECT*-EMMI Workshop "Neutron-Rich Matter and Neutron Stars"
European Centre for Theoretical Studies in Nuclear Physics and Related Areas, Trento, Italy

Quantum Monte Carlo Calculations with Chiral Effective Field Theory Interactions *07/2013*
3rd International Symposium on Nuclear Symmetry Energy
NSCL, Michigan State University, East Lansing, MI

Quantum Monte Carlo with chiral effective field theory interactions (and at lower density) *07/2013*
Advances in quantum Monte Carlo techniques Program
Institute for Nuclear Theory, University of Washington, Seattle, WA

Quantum Monte Carlo with chiral effective field theory interactions *06/2013*
NUCLEI Collaboration meeting
CEEM, Bloomington, IN

Quantum Monte Carlo with chiral effective field theory interactions *03/2013*
Ultracold EMMI Workshop
GSI, Darmstadt, Germany

Quantum Monte Carlo for neutron matter and cold atoms *03/2013*
Ultracold EMMI Workshop
GSI, Darmstadt, Germany

What can QMC do for DFT? (and vice versa) *02/2013*
T-2 Seminar
Theoretical Division, Los Alamos National Laboratory, Los Alamos, NM

Many-Body Approaches to Nuclear Structure and Nuclear Astrophysics *09/2012*
FAIRNESS 2012 Workshop
Hersonissos, Greece

Cold atoms and neutrons: variations on a theme *06/2012*
T34 Seminar
Physics Department, Technische Universität München, Munich, Germany

Cold atoms and neutrons: variations on a theme *05/2012*
The Extreme Matter Physics of Nuclei, EMMI Program
GSI, Darmstadt, Germany

Cold atoms and neutrons: variations on a theme *04/2012*
Theory Seminar
Theory Group, TRIUMF, Vancouver, BC, Canada

A Many-Body Approach to Nuclear Structure *02/2012*
Theory Seminar
NSCL, Michigan State University, East Lansing, MI

Mixed-spin pairing in heavy nuclei *08/2011*
7th ANL/INT/JINA/MSU annual FRIB Workshop
Institute for Nuclear Theory, University of Washington, Seattle, WA

Bridging the gap: fermions in nuclear structure and nuclear astrophysics *06/2011*
Physics Department Colloquium, Job Interview
Physics Department, University of Guelph, Guelph, ON, Canada

Microscopic simulations of low-density neutron matter *06/2011*
Microphysics in Computational Relativistic Astrophysics (MICRA 2011) Workshop
Perimeter Institute, Waterloo, ON, Canada

Bridging the gap: fermions in nuclear and atomic physics *04/2011*
T-2 Seminar
Theoretical Division, Los Alamos National Laboratory, Los Alamos, NM

Bridging the gap: fermions in nuclear structure and nuclear astrophysics *03/2011*
Institute for Nuclear Physics Theory Seminar, Job Interview
Technische Universität Darmstadt, Darmstadt, Germany

Bridging the gap: fermions in nuclear structure and nuclear astrophysics *02/2011*
Physics Division Seminar, Job Interview
Argonne National Laboratory, Argonne, IL

Bridging the gap: fermions in nuclear and atomic physics *11/2010*
Theory Seminar
Theory Group, TRIUMF, Vancouver, BC, Canada

Pairing in 2- and 3-species fermionic systems *03/2010*
Weakly Bound Systems in Atomic and Nuclear Physics Workshop
Institute for Nuclear Theory, University of Washington, Seattle, WA

From Cold Atoms to Neutron Stars and Back *11/2009*
Departmental Colloquium
Physics Department, University of Texas, El Paso, TX

S-wave Pairing in Neutron Matter *05/2009*
Defining the Neutron Star Crust Workshop
Santa Fe, NM

Pairing in Neutron Matter and in Cold Atomic Systems *02/2009*
Nuclear Physics Seminar, Job Interview
Department of Physics, Yale University, New Haven, CT

Pairing in Neutron Matter and in Cold Atomic Systems *02/2009*
Theory Seminar, Job Interview
Theory Group, Argonne National Laboratory, Argonne, IL

Pairing in Neutron Matter and in Cold Atomic Systems *02/2009*
Theory Seminar, Job Interview
Theory Group, TRIUMF, Vancouver, BC, Canada

Pairing in Neutron Matter and in Cold Atomic Systems *01/2009*
Nuclear Theory Group Seminar, Job Interview
Department of Physics, University of Washington, Seattle, WA

Pairing in Neutron Matter and in Cold Atomic Systems *01/2009*
Theory Seminar, Job Interview
Nuclear Theory Group, NSCL, Michigan State University, East Lansing, MI

S-wave Pairing: Neutron Matter and Cold Atoms *11/2008*
Theory Talk
Department of Physics, North Carolina State University, Raleigh, NC

Contributed talks and Posters

Strongly interacting nucleons: from few to many *06/2018*
27th Annual Symposium of the Hellenic Nuclear Physics Society
University of Athens, Athens, Greece

From nuclear forces to structure and astrophysics *06/2015*
CINP Town Hall Meeting
University of Alberta, Edmonton, AB, Canada

Microscopic Simulations in Nuclear Physics: From QCD to EFT and from there to QMC *09/2013*
Physics Department Colloquium
Physics Department, University of Guelph, Guelph, ON, Canada

From atoms to neutrons and back *08/2012*
Quark Gluon Plasma meets Cold Atoms – Episode III, EMMI Workshop
Waldemar-Petersen-Haus, Hirschegg, Austria

Polarization in low-density neutron matter *10/2012*
X_{th} Quark Confinement and the Hadron Spectrum Conference
Physics Department, Technische Universität München, Munich, Germany

Polarized Pairing in Neuron Star Crusts *07/2011*
19th Particles & Nuclei International Conference
Cambridge, MA

Bridging the gap: fermions in nuclear and atomic physics *09/2010*
Nuclear Theory Group Seminar
Department of Physics, University of Washington, Seattle, WA

Cold fermions at unitarity: variations on a theme *05/2010*
Spring Meeting of the APS Division of Atomic, Molecular & Optical Physics
Houston, TX

Strongly Paired Fermions *07/2009*
Summer School on Nuclear and Particle Astrophysics
Institute for Nuclear Theory, University of Washington, Seattle, WA

Strong Correlations in Neutron Matter and in Cold Atomic Systems *01/2009*
T-2 Seminar
Theoretical Division, Los Alamos National Laboratory, Los Alamos, NM

S-wave Pairing in Neutron Matter *10/2008*
Fall Meeting of the APS Division of Nuclear Physics
Oakland, CA

Superfluidity In Neutron Matter And In Cold Atoms *08/2008*
Poster, Summer Institute 2008
TRIUMF, Vancouver, BC, Canada

Neutron Star Matter Superfluidity: from BCS to QMC *07/2007*
Neutron Star Crust and Surface Program
Institute for Nuclear Theory, University of Washington, Seattle, WA

Neutron Star Matter Superfluidity from BCS to QMC *06/2007*
T-16 Seminar
Theoretical Division, Los Alamos National Laboratory, Los Alamos, NM

Quantum Monte Carlo and Neutron Star Matter Superfluidity *04/2007*
American Physical Society April Meeting
Jacksonville, FL

Quantum Monte Carlo and Neutron Star Matter Superfluidity *08/2006*
18th National Nuclear Physics Summer School
Department of Physics, Indiana University, Bloomington, IN

Computer skills

Languages: awk, C, C++, Fortran, Julia, POSIX sh, Python
Computational toolbox: Mathematica, MPI, OpenMP, CUDA C, Intel MKL

Natural languages

English (fluent), French (beginner), German (beginner), Greek (fluent), Spanish (intermediate)