Updated on June 30, 2022

Denys I. Bondar

James MacLaren Early Career Professorship in Physics,
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Education

- Ph. D. in Physics — 01/2007–12/2010
  Department of Physics and Astronomy,
  University of Waterloo, Waterloo, Ontario, Canada
  Ph. D. thesis [arXiv:1012.5334]:
  supervisor: Misha Yu. Ivanov; co-supervisor: Wing-Ki Liu
- M. Sc. and B. Sc. in Physics with Honors — 09/2001–06/2006
  Uzhgorod National University, Uzhgorod, Ukraine
- B. Sc. in Computer Science — 09/2001–06/2006
  Transcarpathian State University, Uzhgorod, Ukraine

Awards

James MacLaren Early Career Professorship in Physics	2021–2024
W. M. Keck Foundation Award	2021–2024
Young Faculty Award DARPA	2019–2021
Defense University Research Instrumentation Program (DURIP)	2018
Humboldt Research Fellowship for Experienced Researchers	2017-2020
Air Force Young Investigator Research Program	2016-2021
Los Alamos Director's Fellowship (declined)	2013
President's Graduate Scholarship (University of Waterloo)	2010
Ontario Graduate Scholarship	2010
International Doctoral Student Awards (University of Waterloo)	2007-2010
Award of Recognition at the All-Ukrainian Contest of Students' Scientific Works	2006

Other grants

Agreement with Sandia National Lab	2022–2024
Agreement with Army Research Lab W911NF-21-2-0139	2021–2023
Army Research Office (ARO) grant W911NF-19-1-0377	2019–2022

Current Research Interests

- Superoscilations
- Quantum technology
- Optics including quantum, ultrafast, nonlinear, and incoherent
- Optical communication and sensing
- Nonequilibrium quantum statistical mechanics
- Many-body quantum physics
- Quantum-classical analogies
- Quantum-classical hybrids
- Tunneling of complex systems (BEC)

Employment

- Assistant Professor — 7/2018 – present
  Department of Physics and Engineering Physics,
  Tulane University, New Orleans, Louisiana, USA
- Lecturer — 2016–8/2018
  Department of Chemistry, Princeton University, New Jersey, USA
- Associate Research Scholar — 4/2014 – 8/2018
  Department of Chemistry, Princeton University, New Jersey, USA
- Postdoctoral Research Associate — 4/2011 – 4/2014
  Department of Chemistry, Princeton University, New Jersey, USA
- Postdoctoral Research Associate — 1/2011–3/2011
  Department of Physics and Astronomy,
  University of Waterloo, Waterloo, Ontario, Canada
- Research Assistant — 1/2007–12/2010
  Department of Physics and Astronomy,
  University of Waterloo, Waterloo, Ontario, Canada
- Visitor — 5/2007–12/2010
  Theory and Computation Group,
  Steacie Institute for Molecular Sciences,
  National Research Council of Canada, Ottawa, Ontario, Canada
- Research Assistant — 9/2005–9/2006
  Collaborative Project Between
  Uzhgorod National University (Uzhgorod, Ukraine)
  and Institute of Experimental Physics SAS (Kosice, Slovak Republic)

Teaching Experience

- Courses taught at Tulane University
  - Phys 4470: "Introduction to Quantum Mechanics" — Spring 2020, 2022
  - Phys 7130: "Solid State Physics" — Fall 2021
  - Engp/Mpen/Phys 3660: "Control Theory" — Spring 2021
  - Astr 1000: "Descriptive Astronomy" — Fall 2019, 2020
  - Phys 3910 / 7310: "Numerical Dynamics Simulations" — Spring 2019
- Courses taught at Princeton University (student evaluation 4.6/6)
  - Chem 502: "Advanced quantum chemistry" — Spring 2012-2018
  - Chem 501: "Basic Principles of Quantum Mechanics" — Fall 2017
- Teaching Assistant (student evaluation – 97 %)
  Department of Physics and Astronomy,
  University of Waterloo, Waterloo, Ontario, Canada
  - Lab supervisor and marker of Phys 112L — 1/2010–5/2010 (Winter 2010)
  - Lab supervisor and marker of Phys 112L — 1/2009–5/2009 (Winter 2009)
  - Tutor of Phys 115: Physics for Engineers and marker of Phys 490: Advanced Math. Phys. — 9/2007–12/2007 (Fall 2007)

Peer Reviewed Publications

55. Jacob Masur, Denys I. Bondar, Gerard McCaul *"Optical Distinguishability of Mott Insulators in Time vs Frequency Domain"* Accepted to Physical Review A [arXiv:2202.06895]

54. Alicia B. Magann, Gerard McCaul, Herschel A. Rabitz, Denys I. Bondar *"Sequential optical response suppression for chemical mixture characterization"* Quantum **6**, 626 (2022) [arXiv:2010.13859]

53. Dmitry V. Zhdanov and Denys I. Bondar *"Joint quantum–classical Hamilton variational principle in the phase space"* Journal of Physics A **55**, 104001 (2022) [arXiv:2111.07554]

52. Wenlei Zhang, Ravi K. Saripalli, Jacob M. Leamer, Ryan T. Glasser, Denys I. Bondar *"Experimental violation of the Leggett-Garg inequality using the polarization of classical light"* Physical Review A **104**, 043711 (2021) [arXiv:2012.03940]

51. Gerard McCaul, Alexander F. King, Denys I. Bondar *"Optical Indistinguishability via Twinning Fields"* Physical Review Letters **127**, 113201 (2021) [arXiv:2103.01162]

50. Alex J. Schimmoller, Gerard McCaul, Hartmut Abele, Denys I. Bondar *"Decoherence-Free Entropic Gravity: Model and Experimental Tests"* Physical Review Research **3**, 033065 (2021) [arXiv:2012.10626]

49. R. Cabrera, A. G. Campos, D. I. Bondar, S. MacLean, F. Fillion-Gourdeau *"Explicit volume-preserving numerical schemes for relativistic trajectories and spin dynamics"* Physical Review E **103**, 043310 (2021) [arXiv:2012.11652]

48. Gerard McCaul and Denys I. Bondar *"How to win friends and influence functionals: deducing stochasticity from deterministic dynamics"*
European Physical Journal Special Topics **230**, 733 (2021) [arXiv:1904.04918]

47. Gerard McCaul, Andreas Mershin, Denys I. Bondar *"Diffusion Fails to Make a Stink"*
Physics of Fluids **33**, 031801 (2021) (Featured paper) [bioRxiv 2020.12.22.424057]
Popularized in FINDING GENIUS PODCAST A Look at Smell with Gerard McCaul

46. Gerard McCaul, Kurt Jacobs, and Denys I. Bondar *"Fast computation of dissipative quantum systems with ensemble rank truncation"*
Physical Review Research **3**, 013017 (2021) [arXiv:2010.05399]

45. Jacob M. Leamer, Wenlei Zhang, Ravi K. Saripalli, Ryan T. Glasser, Denys I. Bondar *"Robust Polarimetry via Convex Optimization"* Applied Optics **59**, 8886 (2020) [arXiv:2006.07770]

44. Gavin McCauley, Benjamin Cruikshank, Denys I. Bondar, and Kurt Jacobs *"Completely Positive, Accurate Master Equation for Weakly-Damped Quantum Systems Across All Regimes"* npj Quantum Information **6**, 74 (2020) [arXiv:1906.08279]

43. Christian Arenz, Denys I. Bondar, Daniel Burgarth, Cecilia Cormick, and Herschel Rabitz *"Amplification of quadratic Hamiltonians"* Quantum **4**, 271 (2020) [arXiv:1806.00444]

    This work featured in the perspective by Wenchao Ge *"Hamiltonian Amplification: Another Application of Parametric Amplification"* Quantum Views 4, **41** (2020)

42. Yi-Siang Wang, Parmeet Nijjar, Xin Zhou, Denys I. Bondar, and Oleg V. Prezhdo *"Combining Lindblad Master Equation and Surface Hopping to Evolve Distributions of Quantum Particles"* Journal of Physical Chemistry B **124**, 4326 (2020)

41. Gerard McCaul, Christopher Orthodoxou, Kurt Jacobs, George H. Booth, and Denys I. Bondar *"Controlling Arbitrary Observables in Correlated Many-body Systems"*
Physical Review A **101**, 053408 (2020) [arXiv:1912.06173] (Editors' Suggestion)
Featured in Physics Making Materials Mimic Each Other
physicsworld Quantum control using laser light could turn insulators into conductors...
U.S. ARMY DEVCOM ARMY RESEARCH LABORATORY Research shows how to make lead act like gold, enabling optical computing
Tulane News The Midas touch

40. Gerard McCaul, Christopher Orthodoxou, Kurt Jacobs, George H. Booth, and Denys I. Bondar *"Driven Imposters: Controlling Expectations in Many-Body Systems"*
Physical Review Letters **124**, 183201 (2020) [arXiv:1911.05006] (Editors' Suggestion)
Featured in Physics Making Materials Mimic Each Other
physicsworld Quantum control using laser light could turn insulators into conductors...

 Research shows how to make lead act like gold, enabling optical computing

 Masters of disguise

 The Midas touch

 Alchemy Arrives in a Burst of Light

 At Last, Alchemy Arrives in a Burst of Light–From Lasers

 Shining a Non-Linear Light

39. Denys I. Bondar and Alexander N. Pechen *"Uncomputability and complexity of quantum control"* Scientific Reports **10**, 1195 (2020) [arXiv:1907.10082]

38. Denys I. Bondar, François Gay-Balmaz, and Cesare Tronci *"Koopman wavefunctions and classical-quantum correlation dynamics"*
Proceedings of the Royal Society A **475**, 2229 (2019) [arXiv:1802.04787]

37. Gerard McCaul, Alexander Pechen, and Denys I. Bondar *"Entropy nonconservation and boundary conditions for Hamiltonian dynamical systems"*
Physical Review E **99**, 062121 (2019) [arXiv:1904.03473]

36. Renan Cabrera, Andre Campos, Herschel A. Rabitz, and Denys I. Bondar *"Operational dynamical modeling of spin 1/2 relativistic particles: The Dirac equation and its classical limit"*
European Physical Journal Special Topics **227**, 2195 (2019) [arXiv:1805.08243]; invited article for collection: Non-equilibrium Dynamics: Quantum Systems and Foundations of Quantum Mechanics

35. Dmitry V. Zhdanov, Denys I. Bondar, and Tamar Seideman *"Friction as a consistent quantum-mechanical concept"* Physical Review A **98**, 042133 (2018) [arXiv:1810.00614]

34. Shanon L. Vuglar, Dmitry V. Zhdanov, Renan Cabrera, Tamar Seideman, Christopher Jarzynski, and Denys I. Bondar *"Nonconservative forces via quantum reservoir engineering"*
Physical Review Letters **120**, 230404 (2018) [arXiv:1611.02736]

Join Tulane University

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33. Andre G. Campos, Renan Cabrera, Herschel A. Rabitz, Denys I. Bondar
"Analytic solutions to coherent control of the Dirac equation"
Physical Review Letters **119**, 173203 (2017) [arXiv:1705.02001]

32. Dmitry V. Zhdanov, Denys I. Bondar, Tamar Seideman
"No thermalization without correlations"
Physical Review Letters **119**, 170402 (2017) [arXiv:1706.00341]

31. Denys I. Bondar, Andre G. Campos, Renan Cabrera, Herschel Rabitz
"How to make distinct dynamical systems appear spectrally identical"
Physical Review Letters **118**, 083201 (2017) [arXiv:1611.02699] (Editors' Suggestion)

Featured in Physics Focus story: Atomic Impersonator

CHEMISTRY WORLD The Royal Society of Chemistry

IOP Physics World

nature materials Masters of disguise

Received a public coverage in science section of *Die Zeit*, a major German newspaper; Princeton University's main web page; Department of Chemistry web page; and other outlets

30. Renan Cabrera, Andre G. Campos, Denys I. Bondar, and Herschel A. Rabitz
"Dirac open quantum system dynamics: formulations and simulations"
Physical Review A **94**, 052111 (2016) [arXiv:1409.1247]

29. Denys I. Bondar, Andre G. Campos, Renan Cabrera, Herschel A. Rabitz
"Efficient computations of quantum canonical Gibbs state in phase space"
Physical Review E **93**, 063304 (2016) [arXiv:1602.07288]

28. Alexei Goun, Denys I. Bondar, Ali O. Er, Zachary Quine, and Herschel A. Rabitz
"Photonic reagents for concentration measurement of fluorescent proteins with overlapping spectra" Scientific Reports **6**, 25827 (2016)

27. Denys I. Bondar, Renan Cabrera, Andre Campos, Shaul Mukamel, and Herschel A. Rabitz
"Wigner–Lindblad equations for quantum friction"
The Journal of Physical Chemistry Letters **7**, 1632 (2016) [arXiv:1412.1892]

Public coverage "Theorists smooth the way to solving one of quantum mechanics oldest problems."

26. Renan Cabrera, Denys I. Bondar, Kurt Jacobs, and Herschel A. Rabitz
"Efficient method to generate time evolution of the Wigner function for open quantum systems" Physical Review A **92**, 042122 (2015) [arXiv:1212.3406]

25. Andre G. Campos, Renan Cabrera, Denys I. Bondar, and Herschel A. Rabitz
"Violation of Hudson's theorem in relativistic quantum mechanics"
Physical Review A **90**, 034102 (2014) [arXiv:1402.1768]

24. Denys I. Bondar, Renan Cabrera, Dmitry V. Zhdanov, and Herschel A. Rabitz
"Wigner phase space distribution as a wave function"
Physical Review A **88**, 052108 (2013) [arXiv:1202.3628]

23. I. I. Bondar, V. V. Suran, and D. I. Bondar *"Multiphoton-double-ionization probability linearly depends on laser intensity: Experimental studies of barium"*
Physical Review A **88**, 023407 (2013) [arXiv:1306.1550]

22. Denys I. Bondar, Renan Cabrera, and Herschel A. Rabitz
"Conceptual Inconsistencies in Finite-dimensional Quantum and Classical Dynamics"
Physical Review A **88**, 012116 (2013) [arXiv:1112.3679]

21. Roberto Rey-de-Castro, Renan Cabrera, Denys I. Bondar, and Herschel Rabitz *"Time-resolved quantum process tomography using Hamiltonian-encoding and observable-decoding"* New Journal of Physics **15**, 025032 (2013); invited article for Focus on Quantum Tomography

20. Denys I. Bondar, Renan Cabrera, Robert R. Lompay, Misha Yu. Ivanov, and Herschel A. Rabitz
"Operational Dynamic Modeling Transcending Quantum and Classical Mechanics"
Physical Review Letters **109**, 190403 (2012) [arXiv:1105.4014]

    This work was popularized by Office of Communications, Princeton University, and after the story featured on the Princeton University's main web page it was reprinted by numerous science news web services including NSF News

19. Denys I. Bondar and Wing-Ki Liu
"Shapes of leading tunnelling trajectories for single-electron molecular ionization"
Journal of Physics A **44**, 275301 (2011) [arXiv:1010.2668]

18. Denys I. Bondar, Robert R. Lompay, and Wing-Ki Liu
"Quantum mechanics of a free particle from properties of the Dirac delta function"
American Journal of Physics **79**, 392 (2011) [arXiv:1007.4243]

17. D. I. Bondar, G. L. Yudin, W.-K. Liu, M. Yu. Ivanov, and A. D. Bandrauk
"Nonsequential double ionization below laser-intensity threshold: Anticorrelation of electrons without excitation of parent ion"
Physical Review A **83**, 013420 (2011) [arXiv:1009.2072]

16. Denys I. Bondar, Wing-Ki Liu, and Misha Yu. Ivanov
"Enhancement and suppression of tunneling by controlling symmetries of a potential barrier"
Physical Review A **82**, 052112 (2010) [arXiv:1006.0905]

15. G. L. Yudin, D. I. Bondar, S. Patchkovskii, P. B. Corkum, and A. D. Bandrauk
"Unified ab initio treatment of attosecond photoionization and Compton scattering"
Journal of Physics B **42**, 205601 (2009) [arXiv:0810.2322]

14. Denys I. Bondar, Wing-Ki Liu, and Gennady L. Yudin
"Adaptation of the modified adiabatic approximation to strong-field ionization"
Physical Review A **79**, 065401 (2009) [arXiv:0906.1284]

13. Denys I. Bondar, Michael Spanner, Wing-Ki Liu, and Gennady L. Yudin
"Photoelectron spectra in strong-field ionization by a high-frequency field"
Physical Review A **79**, 063404 (2009) [arXiv:0809.2819]

12. Denys I. Bondar, Wing-Ki Liu, and Misha Yu. Ivanov
"Two-electron ionization in strong laser fields below intensity threshold: signatures of attosecond timing in correlated spectra" Physical Review A **79**, 023417 (2009) [arXiv:0809.2630]

11. Denys I. Bondar
"Instantaneous multiphoton ionization rate and initial distribution of electron momentum"
Physical Review A **78**, 015405 (2008) [arXiv:0805.1890]

10. D. I. Bondar, M. Hnatich, and V. Yu. Lazur
"Symbolic computations for the two-Coulomb-centers problem in the space of arbitrary dimension" Physics of Particles and Nuclei Letters **5**, 255 (2008)

9. V. V. Bondarchuk, I. M. Shvab, D. I. Bondar, and A. V. Katernoga
"Simple model of scalar-vector interaction for the relativistic two-center problem"
Physical Review A **76**, 062507 (2007)

8. D. I. Bondar, M. Hnatich, and V. Yu. Lazur
"The two Coulomb centres problem at small intercentre separations in the space of arbitrary dimension" Journal of Physics A **40**, 1791 (2007)

7. D. I. Bondar, V. Yu. Lazur, and M. Hnatič
"The two dimensional two coulomb centres problem at small intercenter separation"
Journal of Physical Studies **10**, 1 (2006) [*in Ukrainian*]

6. D. I. Bondar, M. Hnatich, and V. Yu. Lazur
"Two-dimensional problem of two Coulomb centers at small intercenter distances"
Theoretical and Mathematical Physics **148**, 1100 (2006)

5. I. I. Bondar, V. V. Suran, and D. I. Bondar
"Dependence of the efficiency of formation of Ba^{2+} ions by the two-electron mechanism in two laser fields on the laser radiation intensity"
Optics and Spectroscopy **100**, 340 (2006)

4. D. I. Bondar, V. Yu. Lazur, I. M. Schwab, and S. Chalupka
"The two-centre Coulomb problem in the quantum mechanics. Influence of the dimensions"
Journal of Physical Studies **9**, 304 (2005)

3. I. I. Bondar, V. V. Suran, and D. I. Bondar
"Dependence of doubly charged Ion formation by the two-electron mechanism on the intensity of laser radiation"
Optics and Spectroscopy **96**, 16 (2004)

2. I. I. Bondar, V. V. Suran, and D. I. Bondar
"Determination of the Spatial Distribution of Focused Laser Radiation from the Shape of the Stark Resonance Profile" Optics and Spectroscopy **96**, 595 (2004)

1. I. I. Bondar, V. V. Suran, and D. I. Bondar
"Effect of the spatial distribution of laser radiation on the ion yield for the two-electron mechanism of doubly charged ion formation" Laser Physics **14**, 64 (2004)

Provisional patent

Herschel A. Rabitz, Denys I. Bondar, Alexei Goun, Zachary Quine, Ali O. Er (2015)
"Photonic reagents for concentration measurement of molecular species with overlapping spectra"
U.S. Provisional Application No. 62/156,536 (Princeton Univ. Ref.: PU 15-3157)

Non Peer Reviewed Publications

18. Jacob M Leamer, Wenlei Zhang, Nicholas J Savino, Ravi K Saripalli, Sanjaya Lohani, Ryan T Glasser, Denys I. Bondar *"Classical Optical Analogue of Quantum Discord"* [arXiv:2205.00088]

17. Nicholas J Savino, Jacob M Leamer, Wenlei Zhang, Ravi K Saripalli, Ryan T Glasser, Denys I. Bondar *"Coherent Control of Evanescent Waves via Beam Shaping"* [arXiv:2205.00087]

16. Gerard McCaul, Peisong Peng, Monica Ortiz Matrinez, Dustin Lindberg, Diyar Talbayev, Denys I. Bondar *"Superoscillations Made Super Simple"* [arXiv:2204.07088]

15. Denys I. Bondar, Zakhar Popovych, Kurt Jacobs, Georgios Korpas, Jakub Marecek *"Recovering models of open quantum systems from data via polynomial optimization: Towards globally convergent quantum system identification"* [arXiv:2203.17164]

14. Gerard McCaul, Alexander F. King, Denys I. Bondar *"Non-Uniqueness of Non-Linear Optical Response"* [arXiv:2110.06189]

13. Gerard McCaul and Denys I. Bondar *"Towards Single Atom Computing via High Harmonic Generation"* [arXiv:2104.06322]

12. Jacob M. Leamer and Denys I. Bondar *"Positivity Preserving Density Matrix Minimization for Fermi-Dirac States at Finite Temperatures"* [arXiv:2103.07078]

11. Wenlei Zhang, Ravi K. Saripalli, Jacob M. Leamer, Ryan T. Glasser, Denys I. Bondar *"All-optical input-agnostic polarization transformer"* [arXiv:2103.05398]

10. Dmitry V. Zhdanov, Denys I. Bondar *"Quantum and semiclassical dynamics as fluid theories where gauge matters"* [arXiv:2007.14691]

9. Dmitry V. Zhdanov, Denys I. Bondar, Tamar Seideman *"Quantum friction: environment engineering perspectives"* [arXiv:1612.00573]

8. Andre G. Campos, Renan Cabrera, Denys I. Bondar, Herschel Rabitz
"A Lindbladian model of quantum electrodynamics" [arXiv:1502.03025]

7. Renan Cabrera, Denys I. Bondar, Herschel A. Rabitz
"Quantum gate factorization through canonical cosets" [arXiv:1210.7701]

6. Denys I. Bondar, Renan Cabrera, Herschel A. Rabitz, Dmitry V. Zhdanov, and Tamar Seideman *"Want to demystify Physics? Call Ehrenfest!"*
American Physical Society New England Section Newsletter, Vol. 19, No. 1, p. 9

5. Renan Cabrera, Denys I. Bondar, Herschel Rabitz
"Relativistic Quantum and Classical Mechanics in the Hilbert Space" [arXiv:1107.5139]

4. Denys I. Bondar *"The reproduction of the dynamics of a quantum system by an ensemble of classical particles beyond de Broglie–Bohmian mechanics"* (2010). arXiv:1008.2025

3. Denys I. Bondar, Ryan Murray, and Misha Yu. Ivanov *"An electron in the presence of multiple zero range potentials and an external laser field – exact solutions for photoionization and stimulated bremsstrahlung"* (2009). arXiv:0907.2044

2. Denys Bondar *"Applications of The Information Model of The Collapse Phenomena: The Mathematical Model of Everett's Worlds in The Case of The Measurement of A Spin 1/2 Projection"* (2007). arXiv:quant-ph/0701107

1. Denys Bondar *"The information theory and the collapse of a wavefunction at the measurement of a spin 1/2 projection"* (2006). arXiv:quant-ph/0612142

Public outreach

- "Postdocs unify physics theories", interview for The Daily Princetonian
- "Reconcilable differences: Study uncovers the common ground of scientific opposites" My interview featured on the Princeton University's main web page on 30/01/2013 (`http://www.princeton.edu/main/news/archive/S35/94/19I59`) and subsequently reprinted by many science news web services including NSF News
- Demonstrations "Force from emptiness: Casimir force" and "Leidenfrost effect" at National Chemistry Week 2012 Activities Night (Department of Chemistry, Princeton University)
- Demonstration "Quantum control" at National Chemistry Week 2011 Activities Night (Department of Chemistry, Princeton University)
- Production of educational videos: Leidenfrost effect (this video is used for undergraduate teaching in Princeton University), Casimir effect, vacuum fluctuations, and others
- Wikipedia contributor to articles on physics, mathematics, and philosophy

Invited Talks

62. " Quantum System Identification via Polynomial Optimization" Forschungszentrum Jülich, Germany (05/2022) [video]

61. "How to Make Lead look like Gold and Decoherence-Free Entropic Gravity: Model and Experimental Tests" Technische Universität Wien, Vienna, Austria (01/2022)

60. "Decoherence-free entropic gravity: Model and experimental tests" Post PQE 2022, College Station, TX (01/2022)

59. "Asymmetric Tunneling of Bose-Einstein Condensates" PQE2022, Snowbird, UT (01/2022)

58. "Optical superoscillations in time domain" IWOTA 2021, Chapman University, CA (08/2021)

57. "Decoherence-Free Entropic Gravity: Model and Experimental Tests" FQMT'21, Prague, Czech Republic (06/2021)

56. "Symplectic integrator for the Dirac equation in the phase-space" Geometric Algorithms and Methods in Physics, an online seminar series (06/2021)

55. "How to Make Lead look like Gold and Decoherence-Free Entropic Gravity: Model and Experimental Tests" University of Luxembourg, Luxembourg (05/2021)

54. "Koopman wavefunctions and hybrid quantum-classical models" 746. WE-Heraeus-Seminar "Koopman Methods in Classical and Classical-Quantum Mechanics" (online) (04/2021)

53. "How to Make Lead look like Gold and Decoherence-Free Entropic Gravity: Model and Experimental Tests" University of New Orleans, New Orleans, LA (02/2021)

52. "Deducing physical dynamical models from expectation values: Applications to making lead look like gold and formulating entropic gravity" Michigan State University, East Lansing, MI (01/2021)

51. "Towards a single atom computer" Army Science Planning and Strategy Meeting (ASPSM): Integrated Nanophotonics (11/2020)

50. "How to Make Lead look like Gold: Quantum Tracking Control" Online conference Mathematical Methods of Quantum Technologies–4, Steklov Mathematical Institute, Moscow (11/2020)

49. "How to Make Lead look like Gold and Decoherence-Free Entropic Gravity: Model and Experimental Tests" Western Kentucky University, Bowling Green, KY (10/2020)

48. "How to deduce a physical dynamical model from expectation values" University of South Florida, Tampa, FL (11/2019)

47. "How to deduce a physical dynamical model from expectation values" Department of Physics - UMBC, Baltimore, MD (09/2019)

46. "How to deduce a physical dynamical model from expectation values" CQIQC-VIII, Toronto (08/2019)

45. "Uncomputability and complexity of quantum control" FQMT'19, Prague, Czech Republic (07/2019)

44. "How to deduce a physical dynamical model from expectation values" MMCP 2019, Stará Lesná, Slovakia (07/2019)

43. "Computational problems of physics that commuters cannot solve" Ulm University, Ulm, Germany (06/2019)

42. "Uncomputability of quantum control: A connection of Diophantine equations with quantum control problems" Third QuILT Day, University of New Orleans, New Orleans, LA (3/2019) [video]

41. "Classical-quantum hybrid dynamics" Post PQE 2019, College Station, TX (01/2019)

40. "Towards quantum theory of entropic gravity: Can dissipative interactions resemble potential forces?" PQE2019, Snowbird, UT (01/2019)

39. "Uncountability of quantum control: A connection of Diophantine equations with quantum control problem " 2nd International Youth Workshop "Mathematical Methods in the Problems of Quantum Technologies", Moscow, Russia (11/2018) [video]

38. "How to deduce a physical dynamical model from expectation values" AGH University of Science and Technology, Krakow, Poland (11/2018)

37. "How to deduce a physical dynamical model from expectation values" Second QuILT Day, Luisiana State University, Baton Rouge, LA (11/2018) [video]

36. "How to deduce a physical dynamical model from expectation values" City University of Hong Kong, Hong Kong (4/2018)

35. "How to deduce a physical dynamical model from expectation values" Missouri University of Science and Technology, Rolla, MO (4/2018)

34. "How to deduce a physical dynamical model from expectation values" Tulane University, New Orleans, LA (3/2018)

33. "How to deduce a physical dynamical model from expectation values" Institute for Spectroscopy Russian Academy of Sciences, Moscow, Russia (10/2017)

32. "Measurement driven modeling of quantum and classical dynamical systems" International Youth Workshop"Mathematical Methods in the Problems of Quantum Technologies", Moscow, Russia (10/2017) [video]

31. "How to deduce a physical dynamical model from expectation values" University of Illinois at Urbana-Champaign, Champaign, IL (09/2017)

30. "Measurement driven modeling of quantum and classical dynamical systems" Frontiers of Quantum and Mesoscopic Thermodynamics (FQMT'17), Prague, Czech Republic (07/2017)

29. "Measurement driven modeling of quantum and classical dynamical systems" Ulm University, Ulm, Germany (06/2017)

28. "Measurement driven modeling of quantum and classical dynamical systems" King's College London, United Kingdom (05/2017)

27. "How to deduce a physical dynamical model from expectation values" University of Surrey, Guildford, United Kingdom (05/2017)

26. "Measurement driven modeling of quantum and classical dynamical systems" Northwestern University, Evanston, IL (05/2017)

25. "High harmonic generation spectroscopy of quantum non-equilibrium thermodynamics," Max-Born-Institute for Nonlinear Optics and Short Pulse Spectroscopy, Berlin, Germany (12/2016)

24. "Measurement inspired modeling of quantum and classical dynamical systems," University of Massachusetts Boston (10/2016)

23. "Measurement inspired modeling of quantum and classical dynamical systems," ITAMP, Harvard University (10/2016)

22. "Measurement inspired modeling of quantum and classical dynamical systems," University of Maryland, College Park, MD (04/2016)

21. "Measurement inspired modeling of quantum and classical dynamical systems," Western Kentucky University, Bowling Green, KY (01/2016)

20. "Measurement inspired modeling of quantum and classical dynamical systems," Rutgers University, New Brunswick, NJ (01/2016)

19. "Measurement inspired modeling of quantum and classical dynamical systems," Max Planck Institute for the Physics of Complex Systems, Dresden, Germany (12/2015)

18. "A bridge between classical and quantum," Max-Born-Institute for Nonlinear Optics and Short Pulse Spectroscopy, Berlin, Germany (12/2015)

17. "Measurement driven modeling of dynamical systems," Multidisciplinary Research Meeting, Princeton University (10/2015)

16. "Coherent and incoherent approaches to atomtronics," JILA, Boulder, CO (08/2015)

15. "Measurement driven modeling of quantum and classical dynamical systems," JILA, Boulder, CO (08/2015)

14. "Deducing master equations from observed data," MITRE, Princeton, NJ (04/2015)

13. "Excess of positrons in cosmic rays: A Lindbladian model of quantum electrodynamics," Department of Astrophysical Sciences, Princeton University (03/2015)

12. "To commute or not to commute, that is everything to know about classical and quantum mechanics", Department of Physics and Astronomy, State University of New York at Stony Brook (03/2013)

11. "To commute or not to commute, that is everything to know about classical and quantum mechanics", Department of Chemistry, Yale University (01/2013)

10. "Operational Dynamic Modeling: Quantum-to-classical Transition and Relativistic Quantum Transport", Center for Nonlinear Studies, Los Alamos National Laboratory (11/2012)

9. " Operational Dynamic Modelling Transcending Quantum and Classical Mechanics", Hunter College, The City University of New York (10/2012)

8. "Operational Dynamic Modeling Transcending Quantum and Classical Mechanics", Department of Physics, Drexel University, Philadelphia, USA (05/2012)

7. "A unification of quantum and classical mechanics through Ehrenfest theorems", Department of Physics, University of Windsor, Windsor, Canada (02/2012)

6. "A unification of quantum and classical mechanics through Ehrenfest theorems", Perimeter Institute, Waterloo, Canada (01/2012) [video]

5. "A happy marriage between classical and quantum mechanics", Theory and Computation Group, National Research Council of Canada (11/2011)

4. "How to control quantum systems", University of Waterloo (01/2011)

3. "When is it easier for a particle to go through than to fly above a barrier?", University of Waterloo (11/2010)

2. “When is it easier for a particle to go through than to fly above a barrier?”, Department of Electrical Engineering and Computer Science, Massachusetts Institute of Technology (10/2010)

1. “When is it easier for a particle to go through than to fly above a barrier?”, Theory and Computation Group, National Research Council of Canada (09/2010)