RICHARD VASQUES

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Department of Mechanical & Aerospace Engineering ◇ The Ohio State University
E431 Scott Laboratory ◇ 201 W. 19th Avenue ◇ Columbus, OH 43210

EDUCATION

Ph.D. **Applied & Interdisciplinary Mathematics** **2009**
University of Michigan, Ann Arbor, MI
Dissertation: *Anisotropic Diffusion of Neutral Particles in Stochastic Media*
Advisors: Prof. Edward W. Larsen (Nuclear Engineering)
Prof. Charles R. Doering (Applied Mathematics)

M.S. **Applied Mathematics** **2005**
Universidade Federal do Rio Grande do Sul, Porto Alegre, Brazil
Thesis: *A Review of Particle Transport Theory in a Binary Stochastic Medium*
Advisors: Prof. Marco T. Vilhena (Applied Mathematics)
Prof. Edward W. Larsen (Nuclear Engineering)

B.S. **Applied & Computational Mathematics** **2002**
Universidade Federal do Rio Grande do Sul, Porto Alegre, Brazil
Advisor: Prof. Cynthia F. Segatto

EMPLOYMENT

09/2017 - present Assistant Professor, Department of Mechanical & Aerospace Engineering
The Ohio State University, Columbus, OH

06/2015 - 08/2017 Assistant Project Scientist, Department of Nuclear Engineering
University of California, Berkeley, CA

07/2014 - 05/2015 Research Fellow, Department of Mechanical Engineering
Universidade Federal do Rio Grande do Sul, Porto Alegre, Brazil

08/2012 - 07/2014 Wissenschaftlicher Mitarbeiter, Center for Computational Engineering Science
RWTH Aachen University, Aachen, Germany

03/2011 - 07/2012 Assistant Professor, Fundação Getulio Vargas
Escola de Administração de Empresas de São Paulo, São Paulo, Brazil

10/2009 - 02/2011 Associate Consultant, McKinsey & Company
São Paulo, Brazil

09/2008 - 12/2008 Graduate Student Instructor, Department of Mathematics
09/2007 - 12/2007 University of Michigan, Ann Arbor, MI
09/2006 - 12/2006
09/2005 - 12/2005

PEER-REVIEWED PUBLICATIONS (49 TOTAL: 16 J, 32 P, 1 C)

- **Refereed Journal Publications (J)**

(⋆ Indicates advisee at the time of work)

J16. J.K. Patel⋆, L.R.C. Moraes, R. Vasques, R.C. Barros. "Transport synthetic acceleration for the solution of the one-speed nonclassical spectral S_N equations in slab geometry." *Journal of Computational and Applied Mathematics* **401:** 113768 (2022).
doi: 10.1016/j.cam.2021.113768.

J15. J.J. Kuczek*, J.K. Patel*, R. Vasques. "Modified Fokker-Planck acceleration for forward-peaked transport problems in slab geometry." *Journal of Computational and Theoretical Transport* **50:** 430–453 (2021).
doi: 10.1080/23324309.2021.1894174.

J14. R.K. Palmer*, R. Vasques. "Asymptotic derivation of the simplified P_N equations for non-classical transport with anisotropic scattering." *Journal of Computational and Theoretical Transport* **49:** 331–348 (2020).
doi: 10.1080/23324309.2020.1816552.

J13. R. Vasques, L.R.C. Moraes, R.C. Barros, R.N. Slaybaugh. "A spectral approach for solving the nonclassical transport equation." *Journal of Computational Physics* **402:** 109078 (2020).
doi: 10.1016/j.jcp.2019.109078.

J12. I. Makine*, R. Vasques, R.N. Slaybaugh. "Exact transport representations of the classical and nonclassical simplified P_N equations." *Journal of Computational and Theoretical Transport* **47:** 326–349 (2018).
doi: 10.1080/23324309.2018.1496938.

J11. R. Vasques, K. Krycki, R.N. Slaybaugh. "Nonclassical particle transport in one-dimensional random periodic media." *Nuclear Science and Engineering* **185:** 78–106 (2017).
doi: 10.13182/NSE16-35.

J10. M. Wollmann da Silva, R. Vasques, B.E.J. Bodmann, M.T. Vilhena. "A nonstiff solution for the stochastic neutron point kinetics equations." *Annals of Nuclear Energy* **97:** 47–52 (2016).
doi: 10.1016/j.anucene.2016.06.026.

J9. R. Vasques. "The nonclassical diffusion approximation to the nonclassical linear Boltzmann equation." *Applied Mathematics Letters* **53:** 63–68 (2016).
doi: 10.1016/j.aml.2015.10.003.

J8. M. Frank, K. Krycki, E.W. Larsen, R. Vasques. "The nonclassical Boltzmann equation, and diffusion-based approximations to the Boltzmann equation." *SIAM Journal on Applied Mathematics* **75:** 1329–1345 (2015).
doi: 10.1137/140999451.

J7. R. Vasques, N.K. Yadav*. "Adjusted Levermore-Pomraning equations for diffusive random systems in slab geometry." *Journal of Quantitative Spectroscopy & Radiative Transfer* **154:** 98–112 (2015).
doi: 10.1016/j.jqsrt.2014.12.012.

J6. R. Vasques, E.W. Larsen. "Non-classical particle transport with angular-dependent path-length distributions. II: Application to pebble bed reactor cores." *Annals of Nuclear Energy* **70:** 301–311 (2014).
doi: 10.1016/j.anucene.2013.12.020.

J5. R. Vasques, E.W. Larsen. "Non-classical particle transport with angular-dependent path-length distributions. I: Theory." *Annals of Nuclear Energy* **70:** 292–300 (2014).
doi: 10.1016/j.anucene.2013.12.021.

J4. R. Vasques. "Nuclear energy is renewable energy." *Energy Research Journal* **5:** 33–34 (2014).
doi: 10.3844/erjsp.2014.33.34.

J3. E.W. Larsen, R. Vasques. "A generalized linear Boltzmann equation for non-classical particle transport." *Journal of Quantitative Spectroscopy & Radiative Transfer* **112:** 619–631 (2011).
doi: 10.1016/j.jqsrt.2010.07.003.

J2. A.V. Cardona, R. Vasques, M.T. Vilhena. "Uma nova versão do método LTA$_n$." *TEMA: Trends in Computational and Applied Mathematics* **5:** 49–54 (2004).
doi: 10.5540/tema.2004.05.01.0049.

J1. J.R. Zabadal, R. Vasques, A. Haag, C.F. Segatto. "Simulação da dispersão de poluentes em meio aquático usando álgebra de Lie." *Ciência & Natura* **Special:** 145–156 (2002).
doi: 10.5902/2179460X63628.

- **Refereed Conference Proceedings and Transactions (P)**

(· ⋆ Indicates advisee at the time of work; · # Indicates a journal paper followed;
· Conference presenter is underlined; · ◇ Indicates a poster presentation;
· † Indicates abstract/summary peer review; · ‡ Indicates full paper peer review.)

P32. R.K. Palmer⋆, R. Vasques. "The nonclassical simplified P$_2$ and P$_3$ equations with anisotropic scattering." To appear in the *Proceedings of International Conference on Mathematics & Computational Methods Applied to Nuclear Science & Engineering*, Raleigh, NC, October 2021. ‡

P31. J.K. Patel⋆, J.J. Kuczek⋆, R. Vasques. "One-way coupled tumor response model for combined-hyperthermia-radiotherapy treatment with anisotropic scattering." *Transactions of the American Nuclear Society* **121:** 65–68 (2019). ‡
doi: 10.13182/T31123

P30. B.D. Ganapol, J.K. Patel⋆, R. Vasques. "One-way coupled benchmark for combined-hyperthermia-radiotherapy treatment in slab geometry." *Proceedings of 26th ICTT: International Conference on Transport Theory*, Paris, France, September 2019. †

P29. J.K. Patel⋆, J.J. Kuczek⋆, R. Vasques. "Nonlinear Fokker-Planck acceleration for forward-peaked transport problems in slab geometry." *Proceedings of 26th ICTT: International Conference on Transport Theory*, Paris, France, September 2019. †#

P28. J.K. Patel⋆, L.R.C. Moraes, R. Vasques, R.C. Barros. "P$_1$ synthetic acceleration for nonclassical spectral S$_N$ equations in slab geometry." *Proceedings of 26th ICTT: International Conference on Transport Theory*, Paris, France, September 2019. †◇

P27. R. Vasques, P.S. Brantley, R.K. Palmer⋆. "A nonclassical Monte Carlo algorithm for transport problems in diffusive binary stochastic media." *Proceedings of 26th ICTT: International Conference on Transport Theory*, Paris, France, September 2019. †

P26. R.K. Palmer⋆, R. Vasques. "Asymptotic derivation of the simplified P$_N$ equations for nonclassical transport with anisotropic scattering." *Proceedings of 26th ICTT: International Conference on Transport Theory*, Paris, France, September 2019. †#

P25. J.K. Patel⋆, R. Vasques, B.D. Ganapol. "Towards a multiphysics model for tumor response to combined-hyperthermia-radiotherapy treatment." *Proceedings of International Conference on Mathematics & Computational Methods Applied to Nuclear Science & Engineering*, Portland, OR, August 2019. ‡

P24. J. Chen⋆, J.K. Patel⋆, R. Vasques. "Solver recommendation for transport problems in slabs using machine learning." *Proceedings of International Conference on Mathematics & Computational Methods Applied to Nuclear Science & Engineering*, Portland, OR, August 2019. ‡◇

P23. I. Makine⋆, R. Vasques, R.N. Slaybaugh. "Exact transport representations of the classical and nonclassical simplified P$_N$ equations." *Proceedings of 25th ICTT: International Conference on Transport Theory*, Monterey, CA, October 2017. †#

P22. M. Wrenninge, R. Vasques, R.N. Slaybaugh. "A generalized volume rendering approach for computer graphics." *Proceedings of 25th ICTT: International Conference on Transport Theory*, Monterey, CA, October 2017. †

P21. R. Vasques, R.N. Slaybaugh. "Simplified P_N equations for nonclassical transport with isotropic scattering." *Proceedings of International Conference on Mathematics & Computational Methods Applied to Nuclear Science & Engineering*, Jeju, South Korea, April 2017. ‡

P20. R. Vasques, R.N. Slaybaugh, K. Krycki. "Nonclassical particle transport in the 1-D diffusive limit." *Transactions of the American Nuclear Society* **114:** 361–364 (2016). ‡

P19. M. Wollmann da Silva, B.E.J. Bodmann, M.T. Vilhena, R. Vasques. "The solution of the neutron point kinetics equation with stochastic extension: an analysis of two moments." *Proceedings of 7th International Nuclear Atlantic Conference*, São Paulo, Brazil, October 2015. ‡

P18. R. Vasques, K. Krycki. "Boundary conditions for the 1-D non-classical transport equation." *Proceedings of 24th ICTT: International Conference on Transport Theory*, Taormina, Sicily, Italy, September 2015. †

P17. R. Vasques, K. Krycki. "On the accuracy of the non-classical transport equation in 1-D random periodic media." *Proceedings of Joint International Conference on Mathematics and Computation, Supercomputing in Nuclear Applications and the Monte Carlo Method*, Nashville, TN, April 2015. ‡

P16. M. Schumann, R. Engels, M. Frank, J. Furletova, S. Furletov, A. Havenith, G. Kemmerling, J. Kettler, T. Klapdor-Kleingrothaus, E. Mauerhofer, O. Schitthelm, R. Vasques, D. Voß, M. Willenbockel. "Fast neutron imaging with an aSi detector for nuclear waste assay." *Proceedings of 25th SAAGAS: Seminar on Activation Analysis and Gamma Spectroscopy*, Aachen, Germany, February 2015. †

P15. M. Schumann, R. Engels, M. Frank, J. Furletova, A. Havenith, G. Kemmerling, J. Kettler, E. Mauerhofer, O. Schitthelm, R. Vasques. "Detector development for neutron imaging system for radioactive-waste analysis (NISRA) with 14 MeV neutrons." *Proceedings of 10th World Conference on Neutron Radiography*, Grindelwald, Switzerland, October 2014. †◇

P14. R. Engels, M. Frank, J. Furletova, A. Havenith, G. Kemmerling, J. Kettler, E. Mauerhofer, O. Schitthelm, M. Schumann, R. Vasques, D. Voß. "Compact neutron imaging system for radioactive-waste analysis (NISRA)." *Proceedings of 10th World Conference on Neutron Radiography*, Grindelwald, Switzerland, October 2014. †◇

P13. M. Schumann R. Engels, M. Frank, S. Furletov, J. Furletova, C. Genreith, A. Havenith, G. Kemmerling, J. Kettler, T. Krings, E. Mauerhofer, D. Neike, M. Rossbach, O. Schitthelm, R. Vasques, C. Carasco, E. Payan, B. Perot, J.-L. Ma. "Monte-Carlo application for nondestructive nuclear waste analysis." *Proceedings of Joint International Conference on Supercomputing in Nuclear Applications + Monte Carlo*, Paris, France, October 2013. †◇
doi: 10.1051/snamc/201405123

P12. J. Kettler, A. Havenith, D. Neike, E. Mauerhofer, G. Kemmerling, J. Furletova, M. Schumann, M. Frank, O. Schitthelm, R. Engels, R. Vasques, S. Furletov. "Compact neutron imaging system for the investigation of large and dense objects." *Proceedings of 1st NINMACH: International Conference on Neutron Imaging and Neutron Methods in Archaeology and Cultural Heritage Research*, Garching, Germany, September 2013. †

P11. K. Krycki, R. Vasques. "Numerical schemes for a non-classical linear Boltzmann equation for transport through spatially correlated media." *Proceedings of NumHyp: Numerical approximations of hyperbolic systems with source terms and applications*, Aachen, Germany, September 2013. †◇

P10. M. Schumann, R. Engels, M. Frank, S. Furletov, J. Furletova, C. Genreith, A. Havenith, G. Kemmerling, J. Kettler, T. Krings, E. Mauerhofer, D. Neike, M. Rossbach, O. Schitthelm, R. Vasques, C. Carasco, E. Payan, B. Perot, J.-L. Ma. "Zerstörungsfreie Charakterisierung Radioaktiver Abfälle." *VKTA Workshop: Hürden und Fallstricke bei der Charakterisierung von Abfall-Gebinden*, Dresden, Germany, June 2013.†◇

P9. R. Vasques. "Estimating anisotropic diffusion of neutrons near the boundary of a pebble bed random system." *Proceedings of International Conference on Mathematics and Computational Methods Applied to Nuclear Science & Engineering*, Sun Valley, ID, May 2013. ‡

P8. R. Engels, M. Frank, S. Furletov, J. Furletova, A. Havenith, G. Kemmerling, J. Kettler, E. Mauerhofer, D. Neike, O. Schitthelm, M. Schumann, R. Vasques. "Neutron imaging system for radioactive-waste analysis." *Proceedings of 24 SAAGAS: Seminar on Activation Analysis and Gamma Spectroscopy*, Munich, Germany, February 2013. †◇

P7. R. Vasques, E.W. Larsen. "Anisotropic diffusion in model 2-D pebble-bed reactor cores." *Proceedings of International Conference on Advances in Mathematics, Computational Methods, and Reactor Physics*, Saratoga Springs, NY, May 2009. ‡

P6. E.W. Larsen, R. Vasques, M.T. Vilhena. "Particle transport in the 1-D diffusive atomic mix limit." *Proceedings of Mathematics and Computation, Supercomputing, Reactor Physics and Nuclear and Biological Applications*, Avignon, France, September 2005.‡

P5. R. Vasques, M.T. Vilhena, M. Thompson, E.W. Larsen. "State of the art of particle transport theory in stochastic media." *Proceedings of XXV CILAMCE: Iberian Latin American Congress on Computational Methods in Engineering*, Recife, Brazil, November 2004. ‡

P4. A.V. Cardona, R. Vasques. "Aumentando a eficiência computacional do método LTA_n." *Proceedings of XXVI CNMAC: Congresso Nacional de Matemática Aplicada e Computacional*, São José do Rio Preto, Brazil, September 2003.†

P3. A.V. Cardona, R. Vasques, J.V.P. Oliveira. "Solução LTA_n para o problema de transporte em uma placa com uma fonte arbitrária e altas ordens de quadratura." *Proceedings of XXVI CNMAC: Congresso Nacional de Matemática Aplicada e Computacional*, São José do Rio Preto, Brazil, September 2003. †

P2. A.V. Cardona, M.T. Vilhena, J.V.P. Oliveira, R. Vasques. "The one-dimensional LTA_n solution in a slab with high order of quadrature." *Proceedings of 18^{th} ICTT: International Conference on Transport Theory*, Rio de Janeiro, Brazil, July 2003. †◇

P1. R. Vasques, C.F. Segatto, M.T. Vilhena. "The LTS_n solution for the neutron transport equation in spherical geometry." *Proceedings of 18^{th} ICTT: International Conference on Transport Theory*, Rio de Janeiro, Brazil, July 2003. †◇

- **Refereed Book Chapters (C)**

C1. M. Wollmann da Silva, B.E.J. Bodmann, M.T. Vilhena, R. Vasques. "Influence of stochastic moments in the solution of the neutron point kinetics equation." In: C. Constanda, A. Kirsch (eds.): *Integral Methods in Science and Engineering*, Springer: Birkhauser Basel, pp 613–624 (2015).
doi: 10.1007/978-3-319-16727-5_56

PREPRINTS

2. L.R.C. Moraes, J.K. Patel, R.C. Barros, R. Vasques. "An improved spectral approach for solving the nonclassical neutron particle transport equation." arxiv.org/abs/2108.10782 [nucl-th]

1. L.R.C. Moraes, L.B. Barichello, R.C. Barros, R. Vasques. "On the application of the analytical discrete ordinates method to the solution of nonclassical transport problems in slab geometry." *Submitted.* arXiv:2106.13149 [physics.comp-ph]

GRANTS AND FELLOWSHIPS

- **Funding (not including pending applications)**
  - Brazilian Ministry of Education: CAPES-Print Research Grant
    - Title: Modelagem Computacional do Transporte Não-classico de Particulas Neutras
    - Role: Co-PI [with R.C. Barros | UERJ, Brazil]
    - Period: 03/2019 - 02/2022
    - Total funds: $177,245 BRL (Brazilian Real)
  - Nuclear Regulatory Commission: Faculty Development Program
    - Title: Nuclear Engineering Faculty Development
    - Role: Co-PI [with T. Aldemir | OSU)
    - Period: 09/2017 - 09/2020
    - Total funds: $450,000 USD
  - CNPq/Brazilian Ministry of Science and Technology: Advanced and Innovative Nuclear Reactors Research Grant
    - Title: Representação Analitica da Solução de Problemas de Cinetica de Nêutrons Pontual: Efeito das Flutuações Estocasticas
    - Role: PI
    - Period: 07/2014 - 05/2015
    - Total funds: $49,500.00 BRL (Brazilian Real)

- **Fellowships**
  - Fulbright-Capes Doctoral Fellowship, U.S.A. Dept. of State & Brazilian Ministry of Education (2005-2009)
  - CNPq Doctoral Fellowship (declined), Ministry of Science and Technology, Brazil (2005)
  - CNPq Masters Fellowship, Ministry of Science and Technology, Brazil (2003-2005)
  - CAPES Masters Fellowship (declined), Ministry of Education, Brazil (2003)
  - FAPERGS Scientific Initiation Fellowship, Rio Grande do Sul State Government, Brazil (2002)

****Travel and conference grants not listed****

SUPERVISED STUDENTS & RESEARCHERS

Postdoctoral Advisees

2. Mehmet Türkmen, *The Ohio State University* June 2021 - present
Ph.D., M.S., and B.S. from Hacettepe University, Ankara, Turkey.

1. Japan K. Patel, *The Ohio State University* June 2018 - May 2020
Ph.D. and M.S. from The University of New Mexico, Albuquerque; B.S. from Oregon State University.
Subsequent Appointment: Postdoctoral Research Fellow at the University of Michigan, Ann Arbor.

Ph.D. Advisees

- Current

7. Zachary T. Condon, *The Ohio State University* August 2021 - present

6. Lisa S. Enomoto, *Universidade do Estado do Rio de Janeiro, Brazil* January 2021 - present
(co-advisor with R.C. Barros)

5. Alan S. da Silva, *Universidade do Estado do Rio de Janeiro, Brazil* January 2021 - present
(co-advisor with R.C. Barros)

4. Sunday A. Agbo, *The Ohio State University* August 2020 - present

3. Tomás M. Paganin, *The Ohio State University* January 2020 - present

2. John J. Kuczek, *The Ohio State University* August 2017 - present

- Graduated

1. Robert K. Palmer, *The Ohio State University* January 2018 - August 2020

Dissertation: *Asymptotic Derivation of the Simplified P_N Equations for Nonclassical Transport with Anisotropic Scattering*, June 2020.

Subsequent Appointment: Postdoctoral Research Fellow at The Ohio State University.

M.S. Advisees

- Graduated

2. Ilker Makine, *University of California, Berkeley* March 2017 - September 2017
and *Université Libre de Bruxelles, Belgium*
(co-advisor with R.N. Slaybaugh)

Thesis: *Exact Transport Representations of the Classical and Nonclassical Simplified P_N Equations with Isotropic Scattering*, September 2017.

Subsequent Appointment: Junior Nuclear Design Engineer, Tractebel - Engie Group, Belgium.

1. Nitin K. Yadav, *RWTH Aachen University, Germany* September 2013 - April 2014
and *Indian Institute of Technology, Madras*
(co-advisor with M. Frank)

Thesis: *An Extended Closure for the Levermore-Pomraning Equations in Scattering Random Media*, March 2014.

Subsequent Appointment: Ph.D. student at Eindhoven University of Technology, Netherlands.

Other Graduate Research Advisees

- Past

2. Jinzhao Chen, *The Ohio State University* August 2018 - December 2018

Topic: *Machine Learning for Transport Solvers.*

1. Srikanth Gopalakrishnan, *RWTH Aachen University* September 2013 - February 2014

Topic: *Neutron Imaging System for Radioactive Waste Analysis.*

Undergraduate Research Advisees

- Past

4. Mingjian Lu, *University of California, Berkeley* July 2016 - February 2017

Topic: *Optimization of 1-D Transport Solvers in Python.*

3. Clay Shieh, *University of California, Berkeley* January 2016 - May 2016

Topic: *Implementation of 1-D Transport Solvers in Python.*

2. Akash Pakanati, *RWTH Aachen University* June 2013 - March 2014

Topic: *Simulation of Photon Path-length Distributions in Atmospheric Clouds.*

1. Nikhil Bandari, *RWTH Aachen University* May 2013 - July 2013

Topic: *Image Processing Techniques Applied to Reconstruction Algorithms for Neutron Imaging.*

TEACHING EXPERIENCE

- **The Ohio State University, Columbus**

– **Faculty (Autumn 2017 - present)**

The College and University comparison groups are based on the size of the class. The Department group is not. Class size groups are 1-19, 20-60 and 61+.

– Introduction to Nuclear Science and Engineering (Nuclr Eng 4505 / Mech Eng 4505)
  - Autumn 2021, 55 students. **Current**.
  - Spring 2021, 60 students. Overall Rating: **4.83/5.00**.
    Department · College · University averages: 4.29 · 4.32 · 4.41 / 5.00
  - Autumn 2020, 42 students. Overall Rating: **4.92/5.00**.
    Department · College · University averages: 4.24 · 4.34 · 4.41 / 5.00
  - Autumn 2018, 51 students. Overall Rating: **4.58/5.00**.
    Department · College · University averages: 4.19 · 4.22 · 4.32 / 5.00
  - Spring 2018, 43 students. Overall Rating: **4.8/5.0**.
    Department · College · University averages: 4.2 · 4.4 · 4.2 / 5.0

– Reactor Theory (Nuclr Eng 6708)
  - Autumn 2021, 8 students. **Current**.
  - Autumn 2020, 6 students. Overall Rating: **5.00/5.00**.
    Department · College · University averages: 4.24 · 4.55 · 4.56 / 5.00

– Nuclear Engineering at The Ohio State University (Nuclr Eng 2194)
  - Autumn 2021, 10 students. **Current**.
  - Autumn 2020, 18 students. Overall Rating: **4.60/5.00**.
    Department · College · University averages: 4.24 · 4.55 · 4.56 / 5.00

– Neutron Slowing Down and Thermalization (Nuclr Eng 7865)
  - Spring 2020, 7 students. Overall Rating: **5.00/5.00**.
    Department · College · University averages: 4.25 · 4.52 · 4.59 / 5.00

– Nuclear Engineering Seminar (Nuclr Eng 6881)
  - Sp/Au 2021, Au 2020

  - Nuclear Engineering Research (Nuclr Eng 8998/8999)
    - Sp/Au 2021, Sp/Su/Au 2020, Sp/Au 2019, Sp/Au 2018
  - Individual Studies in Nuclear Engineering (Nuclr Eng 6193)
    - Sp 2020, Sp 2019

- **University of California, Berkeley**

– **Guest Lecturer (Fall 2015 - Spring 2017)**
  - Introduction to Numerical Simulations for Radiation Transport: 11 lectures
  - Numerical Simulations in Radiation Transport: 7 lectures
  - Nuclear Reactor Theory: 3 lectures
  - Introduction to Nuclear Engineering: 1 lecture

- **RWTH Aachen University, Germany**

– **Instructor**
  - Advanced Topics in Transport Theory: Summer 2013

– **Recitation Leader**
  - Mathematics III (Partial Differential Equations): Winter 2012-2013

– **Organizer and Instructor**
  - MathCCES Teaching Workshop: April 2013

- **Fundação Getulio Vargas, Brazil**

– **Professor**
  - Matematica I (Calculus I): 2011-1, 2011-2, 2012-1
  - Matematica II (Calculus II): 2011-2, 2012-1

- **University of Michigan, Ann Arbor**

– **Graduate Student Instructor**
  - Calculus II (Math 116): Fall 2008
  - Calculus I (Math 115): Fall 2006
  - Data Functions & Graphs (Math 105): Fall 2005, Fall 2009

- **Invited Short Courses**

– **Institute of Mathematics and Statistics, Federal University of Rio Grande do Sul, Brazil**
  - Particle Transport in Stochastic Media (graduate-level short course, 30 hours): December 2013

PROFESSIONAL SERVICE

- **Conference Activities (Organizing, Technical, and Scientific Advisory Committees)**
  - Member, Technical Program Committee: M&C 2021–International Conference on Mathematics and Computational Methods Applied to Nuclear Science and Engineering, Raleigh, NC (October 3-7, 2021)
  - Member, Scientific Advisory Committee: 26^{th} International Conference on Transport Theory, Paris, France (September 23-27, 2019)

- Member, Technical Program Committee: M&C 2019–International Conference on Mathematics and Computational Methods Applied to Nuclear Science and Engineering, Portland, OR (August 25-29, 2019)
- Member, Organizing Committee (Student Arrangement Chair): M&C 2019–International Conference on Mathematics and Computational Methods Applied to Nuclear Science and Engineering, Portland, OR (August 25-29, 2019)
- Member, Local Organizing Committee: 25^{th} International Conference on Transport Theory, Monterey, CA (October 16-20, 2017)

• **Editorial Activities**

- Associate Guest Editor: Journal of Computational and Theoretical Transport, Volume 47, Issues 1-6 (2018)
- Member, Editorial Board: Energy Research Journal (07/2014 - 06/2016)

• **Refereeing Activities**

- Reviewer for the following Journals (listed in alphabetical order):
  - Annals of Nuclear Energy
  - Brazilian Journal of Radiation Sciences
  - Energy Research Journal
  - International Journal of Nuclear Energy Science and Technology
  - Journal of Computational and Theoretical Transport
  - Journal of Computational Physics
  - Journal of Quantitative Spectroscopy and Radiative Transfer
  - Journal of Scientific Computing
  - Kinetic and Related Models
  - Medical Physics
  - Nuclear Engineering and Design
  - Nuclear Engineering and Technology
  - Nuclear Science and Engineering
  - Progress in Nuclear Energy
- Reviewer for the following Technical Conferences:
  - American Nuclear Society (ANS)
    - ANS Mathematics & Computation Division (MCD)
      - MCD Topical Meeting, 2021
      - MCD Topical Meeting, 2019
      - MCD Topical Meeting, 2017
      - MCD Topical Meeting, 2015
    - ANS Student Conference, 2016
  - International Conference on Transport Theory (ICTT)
    - 26^{th} ICTT, 2019
    - 25^{th} ICTT, 2017
- Reviewer for the following Fellowships:
  - Pelotonia Graduate Fellowship
    - Autumn 2020
    - Autumn 2019

• **Outreach Activities**

- Member, Organizing Committee: Nuclear Innovation Bootcamp - Tomorrow Today, UC Berkeley, CA (July 16-29, 2017)
- Member, Organizing Committee: Nuclear Innovation Bootcamp - Nuclear Upended, UC Berkeley, CA (August 01-12, 2016)

- **Other Activities - Broad Academic Community**
  - Virtual "Alumni Chat" with Graduate Students of the Applied and Interdisciplinary Mathematics (AIM) Graduate Program at the University of Michigan, Ann Arbor (February 19, 2021)
- **Courtesy Appointments**
  - Adjunct Professor, Department of Mathematics & Statistics,
    Bowling Green State University, Bowling Green, OH
- **Professional Societies**
  - Member, ANS - American Nuclear Society (2012 - present)
    - Mathematics & Computation Division
    - Reactor Physics Division
    - Young Members Group
    - Faculty Advisor for OSU ANS Student Section (08/2019-present)
  - Member, SIAM - Society for Industrial and Applied Mathematics (2012 - present)
    - SIAG on Computational Science and Engineering
  - Council Member, Brazilian Alumni Association of Fulbright Fellows (2010 - 2012)
- **Dissertation and Thesis Defenses, Candidacy and Qualifying Exams (External to OSU)**
  - Lisa S. Enomoto, Ph.D. Qualifying Exam in Computational Modeling — February 26, 2021
    Graduate Program in Computational Modeling
    Universidade do Estado do Rio de Janeiro, Brazil
  - Alan S. da Silva, Ph.D. Qualifying Exam in Computational Modeling — February 26, 2021
    Graduate Program in Computational Modeling
    Universidade do Estado do Rio de Janeiro, Brazil
  - Luana Lazzari, Ph.D. Candidacy Exam in Applied Mathematics — March 10, 2020
    Graduate Program in Applied Mathematics
    Universidade Federal do Rio Grande do Sul, Brazil
    Topic: Simulação do problema de transporte em domínio não homogêneo
  - César Bublitz, Ph.D. Candidacy Exam in Applied Mathematics — June 06, 2019
    Graduate Program in Applied Mathematics
    Universidade Federal do Rio Grande do Sul, Brazil
    Topic: Computational Methods for Radiative Transport in Cylindrical Geometry
  - Eduardo S. Schneider, Ph.D. Dissertation Defense in Mathematics — August 21, 2018
    Department of Mathematics and Statistics
    Bowling Green State University, Bowling Green, OH
    Topic: Exact calculations for the Lagrangian Velocity
- **Internal Service for OSU - Departmental Committees**
  - Graduate Studies Committee (member), Autumn 2017-present
    - Admissions Subcommittee (member), Autumn 2017-present
    - Policy & Procedure Subcommittee (member), Autumn 2017-present
    - Fellowship Subcommittee (member), Autumn 2017-present
    - Served as GSC representative in the Dynamics and Kinematics Oral Qualifying Exam of Mr. Andrej Simeunovic (02/22/2019)
  - Nuclear Engineering Program: Graduate Recruitment Committee (member), Autumn 2017-present
  - MAE Department Chair Search Committee (member), Autumn 2019
  - Faculty Search Committee: Nuclear Thermal Hydraulics (member), Autumn 2017-Spring 2018

- **Internal Service for OSU - Qualifying Exams, Candidacy Exams, Defenses**
  - Member of the Qualifying Exam Committee in Mathematics (08/2021, 01/2021, 08/2020, 01/2020, 08/2019, 01/2019)
  - Member of the dissertation committee (NE Ph.D.) for Ms. Tseelmaa Byambaakhuu's: "Development of Advanced Numerical Methods for Solving Neutron Transport Problems: DG-DSA and the Shishkin Mesh for Problems with Sharp Layers" (04/08/2021)
  - Member of the committee for Ms. Tseelmaa Byambaakhuu's candidacy exam (01/06/2021)
  - Chair of the committee for Mr. John J. Kuczek's candidacy exam (11/02/2020)
  - Chair of the dissertation committee (NE Ph.D.) for Mr. Robert K. Palmer: "Asymptotic Derivation of the Simplified P_N Equations for Nonclassical Transport with Anisotropic Scattering" (06/22/2020)
  - Member of the thesis committee (NE Masters) for Mr. Joshua Rocheleau: "An Analytical Nodal Discrete Ordinates Solution to the Transport Equation in Cartesian Geometry" (04/06/2020)
  - Member of the dissertation committee (NE Ph.D.) for Mr. William C. Chuirazzi: "Combinatorial Optimization of Scintillator Screens for Digital Neutron Imaging" (03/20/2020)
  - Chair of the committee for Mr. Robert K. Palmer's candidacy exam (12/03/2019)
  - Member of the Qualifying Exam Committee in Statistics (08/2019)
  - Member of the Qualifying Exam Committee in Reactor Physics and Engineering (08/2019, 08/2018)
  - Member of the committee for Mr. Ibrahim Oksuz's candidacy exam (12/20/2018)
  - Member of the thesis committee (NE Masters) for Mr. Andrew M. Zapp: "Design and development of an external fast neutron beam facility at the Ohio State University Research Reactor" (12/17/2018)
  - Member of the committee for Mr. Boyuan Li's candidacy exam (04/30/2018)
- **Internal Service for OSU - Other Departmental Service**
  - Organized OSU's Virtual Career Fair Booth at the ANS 2021 Student Conference (04/2021)
  - Organized and hosted recruiting event for the Nuclear Engineering Minor Program (04/06/2021)
  - Created new NE course: "NE 2194 - Nuclear Engineering at The Ohio State University", offered for the first time in Autumn 2020 (Spring 2020)
  - Monte and Usha Ahuja Distinguished Lecture Series
    - Hosted Dr. Anil K. Prinja from the University of New Mexico, Albuquerque (02/2020)
  - Nuclear Engineering Seminar
    - Co-chair (08/2019-present)
    - Hosted Dr. Ricardo C. Barros, from State University of Rio de Janeiro, Brazil (12/2019)
    - Hosted Dr. James Bevins from Air Force Institute of Technology (12/2018)
    - Hosted Dr. Anthony Davis from NASA Jet Propulsion Laboratory (11/2018)
  - Drafted content for the Nuclear Program handout material (11/2019)
  - Organized and hosted Nuclear Program information session (11/22/2019)
  - Member of the work group developing the Nuclear Engineering Program Strategic Plan (01/2018-03/2019)
  - Organized and hosted a Recruitment Event for the Nuclear Engineering Graduate Program (10/30/2018)
  - Visited ENGR 1100 (Engineering Survey) class to give a presentation and discuss undergraduate research and connecting with faculty members (10/08/2018)
  - Developed HTML Recruiting Email for the Nuclear Engineering Program (completed 02/05/2018)
  - Designed syllabus for new course: ME 8518 Advanced Mathematical Methods in ME, in preparation for new Math QE (12/15/2017)
  - Wrote first draft of the Strategic Plan for the Nuclear Engineering Program (11/2017)

- Organized and hosted recruiting event for the Nuclear Engineering graduate program at the University of Dayton (11/29/2017)
- Organized and hosted recruiting event for the Nuclear Engineering graduate program at Case Western Reserve University (11/14/2017)

• **Internal Service for OSU - College of Engineering**

- Represented the College in the Graduate School Fair at Ohio Northern University (09/27/2017)
- Represented the College in the Graduate School Fair during the "Big Ten+ Graduate School Exposition" at Purdue University (09/25/2017)

• **Internal Service for OSU - University Level**

- Served as Graduate Faculty Representative for the Graduate School at Mr. Raphael Palermo dos Santos dissertation defense in the Graduate Program in Portuguese: "Humor no Cinema Contemporâneo Brasileiro: o Negócio das Comédias" (07/16/2021)
- Member of OSU's review committee in the Internal Limited Competition for the NRC University Nuclear Leadership Program, Research and Development Grant, FY2021 (04/2021)
- Faculty Advisor for OSU ANS Student Section (08/2019-present)
- Pelotonia Fellowship Program Reviewer (Fall 2020, Fall 2019)
- Served as Graduate Faculty Representative for the Graduate School at Mr. Fernando Lima e Morato dissertation defense in the Graduate Program in Portuguese: "Um mestre na periferia da Arcádia: a obra poética de Manuel Inácio da Silva Alvarenga no contexto do Império português do século XVIII" (05/29/2019)
- Served as Graduate Faculty Representative for the Graduate School at Mr. Andrew Hart's dissertation defense in the Department of Physics: "Search for disappearing tracks in proton-proton collisions at $\sqrt{s} = 13$ TeV" (01/26/2018)