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Education

- **Ph.D. in Aerospace Engineering (2013)**
  Virginia Polytechnic Institute and State University (Virginia Tech), Blacksburg, VA
  Advisor: Wayne L. Neu
  Dissertation Title: "Improved Underwater Vehicle Control and Maneuvering Analysis with Computational Fluid Dynamics Simulations"

- **B.S. in Ocean Engineering (2009)**
  Virginia Polytechnic Institute and State University (Virginia Tech), Blacksburg, VA
  Graduated Magna Cum Laude

Publications

Journal articles

J49. Nicholas Ross, Delaney Heileman, A. Gerrit Motes, Anwi Fomukong, Giorgio Bacelli, Steven J. Spencer, Dominic D. Forbush, Kevin Dullea, and **Ryan G. Coe**. A portable wave tank and wave energy converter for engineering dissemination and outreach. *Hardware*, 3(2), 2025. ISSN 2813-6640. doi: 10.3390/hardware3020005. URL https://www.mdpi.com/2813-6640/3/2/5

J48. Tanvir Alam Shifat, **Ryan Coe**, Gioegio Bacelli, and Ted Brekken. Real-time sea state estimation for wave energy converter control via machine learning. *Applied Sciences*, 15(10), 2025. ISSN 2076-3417. doi: 10.3390/app15105772. URL https://www.mdpi.com/2076-3417/15/10/5772

J47. Jeff Grasberger, Dominic Forbush, Johannes Spinneken, Mark Bruggemann, Jantzen Lee, Alex Franks, John Reine, Giorgio Bacelli, Albert Plueddemann, Donald Peters, and **Ryan G. Coe**. Hydrodynamic characterization of the Coastal Pioneer Array ocean observing system. *Journal of Ocean Engineering and Marine Energy*, 2025. doi: 10.1007/s40722-025-00392-y. URL https://doi.org/10.1007/s40722-025-00392-y

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J45. Jantzen Lee, Alicia Keow, **Ryan G. Coe**, Giorgio Bacelli, Johannes Spinneken, Steven J. Spencer, and Damian Gallegos-Patterson. Theory, analysis, and testing of an angular resonator for wave energy generation. *Journal of Ocean Engineering and Marine Energy*, 11(1):97–107, 2025. doi: 10.1007/s40722-024-00366-6. URL https://link.springer.com/article/10.1007/s40722-024-00366-6

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J43. Michael C. Devin, Daniel T. Gaebele, Carlos A. Michelén Ströfer, Jeff T. Grasberger, Jantzen Lee, **Ryan G. Coe**, and Giorgio Bacelli. High-dimensional control co-design of a wave energy converter with a novel pitch resonator power takeoff system. *Ocean Engineering*, 312:119124, September 2024. ISSN 0029-8018. doi: 10.1016/j.oceaneng.2024.119124. URL https://www.sciencedirect.com/science/article/pii/S0029801824024624

J42. Alfred Cotten, Adi Kurniawan, Vincent S. Neary, **Ryan G. Coe**, and Giorgio Bacelli. A compressible degree of freedom as a means for improving the performance of heaving wave energy converters. *Renewable Energy*, page 120421, 2024. ISSN 0960-1481. doi: 10.1016/j.renene.2024.120421. URL https://www.sciencedirect.com/science/article/pii/S0960148124004865

J41. Simone Giorgi, **Ryan G. Coe**, Meagan Reasoner, Giorgio Bacelli, Dominic Forbush, Scott Jensen, and Andrew Hamilton. Wave energy converter power take-off modeling and validation from experimental bench tests. *IEEE Journal of Oceanic Engineering*, 49(2):446–457, 2024. doi: 10.1109/JOE.2023.3345903. URL https://ieeexplore.ieee.org/document/10436658

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J39. John V. Ringwood, Nathan Tom, Francesco Ferri, Yi-Hsiang Yu, **Ryan G. Coe**, Kelley Ruehl, Giorgio Bacelli, Shuo Shi, Ron J. Patton, Paolino Tona, Guillaume Sabiron, Alexis Merigaud, Bradley A. Ling, and Nicolas Faedo. The wave energy converter control competition (WECCCOMP): Wave energy control algorithms compared in both simulation and tank testing. *Applied Ocean Research*, 138:103653, September 2023. ISSN 0141-1187. doi: 10.1016/j.apor.2023.103653. URL https://www.sciencedirect.com/science/article/pii/S0141118723001943

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J37. Jorge A. Leon-Quiroga, Giorgio Bacelli, Dominic D. Forbush, Steven J. Spencer, and **Ryan G. Coe**. An efficient and effective WEC power take-off system. *IEEE Transactions on Sustainable Energy*, 14(3):1526–1539, July 2023. doi: 10.1109/TSTE.2023.3237125. URL https://ieeexplore.ieee.org/document/10017387

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J34. Bret Bosma, **Ryan Coe**, Giorgio Bacelli, Ted Brekken, and Budi Gunawan. Mini-DAQ: A lightweight, low-cost, high resolution, data acquisition system for wave energy converter testing. *HardwareX*, 12:e00332, October 2022. ISSN 2468-0672. doi: 10.1016/j.ohx.2022.e00332. URL https://www.sciencedirect.com/science/article/pii/S2468067222000773

J33. Dominic D. Forbush, Giorgio Bacelli, and **Ryan G. Coe**. Self-tuning, load-mitigating feedback control of a 3-DOF point absorber. *International Marine Energy Journal*, 5(1):23–35, June 2022. doi: 10.36688/imej.5.23-35. URL https://marineenergyjournal.org/imej/article/view/68

J32. Ali S. Haider, Ted K. A. Brekken, **Ryan G. Coe**, Giorgio Bacelli, and Alan McCall. On real-time hybrid testing of ocean wave energy conversion systems: An experimental study. *IEEE Open Journal of Industry Applications*, 3:30–40, February 2022. doi: 10.1109/OJIA.2022.3148388. URL https://ieeexplore.ieee.org/document/9705552/

J31. Liliana Haus, D. Todd Griffith, **Ryan G. Coe**, and Giorgio Bacelli. Development and characterization of a coupled structural dynamics model for the Sandia wave energy converter testbed. *Journal of Ocean Engineering and Marine Energy*, 8:117–135, January 2022. doi: 10.1007/s40722-021-00220-z. URL https://doi.org/10.1007/s40722-021-00220-z

J30. Dominic D. Forbush, Giorgio Bacelli, Steven J. Spencer, **Ryan G. Coe**, Bret Bosma, and Pedro Lomonaco. Design and testing of a free floating dual flap wave energy converter. *Energy*, 240:122485, February 2022. ISSN 0360-5442. doi: 10.1016/j.energy.2021.122485. URL https://www.sciencedirect.com/science/article/pii/S0360544221027341

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J24. Pablo Ropero-Giralda, Alejandro J. C. Crespo, **Ryan G. Coe**, Bonaventura Tagliafierro, Jose M. Dominguez, Giorgio Bacelli, and Moncho Gomez-Gesteira. Modelling a heaving point-absorber with a closed-loop control system using the DualSPHysics code. *Energies*, 14(3), 2021. ISSN 1996-1073. doi: 10.3390/en14030760. URL https://www.mdpi.com/1996-1073/14/3/760

J23. Aubrey Eckert, Nevin Martin, **Ryan G. Coe**, Bibiana Seng, Zacharia Stuart, and Zachary Morrell. Development of a comparison framework for evaluating environmental contours of extreme sea states. *Journal of Marine Science and Engineering*, 9(1):16, 2021. doi: 10.3390/jmse9010016. URL https://doi.org/10.3390/jmse9010016

J22. Giorgio Bacelli and **Ryan G. Coe**. Comments on control of wave energy converters. *IEEE Transactions on Control Systems Technology*, 29(1):478–481, Jan 2021. doi: 10.1109/TCST.2020.2965916. URL https://ieeexplore.ieee.org/document/9005201

J21. **Ryan G. Coe**, Giorgio Bacelli, Sterling Olson, Vincent S. Neary, and Matthew B. R. Topper. Initial conceptual demonstration of control co-design for WEC optimization. *Journal of Ocean Engineering and Marine Energy*, 6(4):441–449, 2020. doi: 10.1007/s40722-020-00181-9. URL https://doi.org/10.1007/s40722-020-00181-9

J20. Umesh A. Korde, **Ryan G. Coe**, and Giorgio Bacelli. Deterministic incident wave elevation prediction in intermediate water depth. *Journal of Ocean Engineering and Marine Energy*, 6(4):359–376, November 2020. doi: 10.1007/s40722-020-00177-5. URL https://doi.org/10.1007/s40722-020-00177-5

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J18. David G. Wilson, Rush D. Robinett, Giorgio Bacelli, Ossama Abdelkhalik, and **Ryan G. Coe**. Extending complex conjugate control to nonlinear wave energy converters. *Journal of Marine Science and Engineering*, 8 (2):84, Jan 2020. ISSN 2077-1312. doi: 10.3390/jmse8020084. URL http://dx.doi.org/10.3390/jmse8020084

J17. Giorgio Bacelli, Victor Nevarez, **Ryan G. Coe**, and David Wilson. Feedback resonating control for a wave energy converter. *IEEE Industrial Automation and Control*, 56(2):1862–1868, 2020. doi: 10.1109/TIA.2019.2958018. URL https://ieeexplore.ieee.org/document/8926523

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J13. **Ryan G. Coe**, Brian J. Rosenberg, Eliot W. Quon, Chris C. Chartrand, Yi-Hsiang Yu, Jennifer van Rij, and Tim R. Mundon. CFD design-load analysis of a two-body wave energy converter. *Journal of Ocean Engineering and Marine Energy*, 5(2):99–117, 2019. doi: 10.1007/s40722-019-00129-8. URL https://doi.org/10.1007/s40722-019-00129-8

J12. Giorgio Bacelli, Steven J. Spencer, David C. Patterson, and **Ryan G. Coe**. Wave tank and bench-top control testing of a wave energy converter. *Applied Ocean Research*, 86:351 – 366, 2019. ISSN 0141-1187. doi: 10.1016/j.apor.2018.09.009. URL http://www.sciencedirect.com/science/article/pii/S0141118717307484

J11. Vincent S. Neary, **Ryan G. Coe**, João Cruz, Kevin Haas, Giorgio Bacelli, Yannick Debruyne, Seongho Ahn, and Victor Nevarez. Classification systems for wave energy resources and WEC technologies. *International Marine Energy Journal*, 1(2):71–79, Nov 2018. doi: 10.36688/imej.1.71-79. URL https://marineenergyjournal.org/imej/article/view/29

J10. Samuel J. Edwards and **Ryan G. Coe**. The Effect of Environmental Contour Selection on Expected Wave Energy Converter Response. *Journal of Offshore Mechanics and Arctic Engineering*, 141(1), 08 2018. ISSN 0892-7219. doi: 10.1115/1.4040834. URL https://doi.org/10.1115/1.4040834. 011901

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J2. **Ryan G. Coe**, Giorgio Bacelli, David G. Wilson, Ossama Abdelkhalik, Umesh A. Korde, and Rush D. Robinett III. A comparison of control strategies for wave energy converters. *International Journal of Marine Energy*, 20(Supplement C):45 – 63, 2017. ISSN 2214-1669. doi: 10.1016/j.ijome.2017.11.001. URL http://www.sciencedirect.com/science/article/pii/S2214166917300905

J1. Ossama Abdelkhalik, Rush Robinett, Shangyan Zou, Giorgio Bacelli, **Ryan Coe**, Diana Bull, David Wilson, and Umesh Korde. On the control design of wave energy converters with wave prediction. *Journal of Ocean Engineering and Marine Energy*, 2(4):473–483, 2016. ISSN 2198-6452. doi: 10.1007/s40722-016-0048-4. URL http://dx.doi.org/10.1007/s40722-016-0048-4

Book contributions

B1. Krish Thiagarajan Sharman and Roger Basu. *Ocean Structures Design: From Oil & Gas to Blue Economy*. American Institute of Physics, 2021 (in prep) (case-study contributed by **Ryan G. Coe**)

Editorials

E2. **Ryan G. Coe** and Giorgio Bacelli. Useful power maximization for wave energy converters. *Energies*, 16(1), 2023. ISSN 1996-1073. doi: 10.3390/en16010529. URL https://www.mdpi.com/1996-1073/16/1/529

E1. Andreas F. Haselsteiner, **Ryan G. Coe**, and Lance Manuel. A second benchmarking exercise on estimating extreme environmental conditions. *Ocean Engineering*, page 109111, 2021. ISSN 0029-8018. doi: 10.1016/j.oceaneng.2021.109111. URL https://www.sciencedirect.com/science/article/pii/S0029801821005473

Peer reviewed conference papers

C65. Daniel Gaebele, Giorgio Bacelli, **Ryan Coe**, Dominic Forbush, Courtney Beringer, Bret Bosma, Bryson Robertson, and Pedro Lomonaco. Streamlined experimental approach to system identification of WEC dynamics and excitation characteristics. In *International Conference on Ocean, Offshore and Arctic Engineering (OMAE2025)*, Vancouver, British Columbia, Canada, June 2025. ASME

C64. Jeff T. Grasberger, **Ryan G. Coe**, Daniel T. Gaebele, Michael C. Devin, Carlos A. Michelén Ströfer, and Giorgio Bacell. Frequency array and wave phase realizations for wave energy converter control optimization. In *International Conference on Ocean Energy (ICOE 2024)*, Melbourne, Australia, September 2024

C63. **Ryan G. Coe**, Michael C. Devin, Carlos A. Michelén Ströfer, Jantzen Lee, Giorgio Bacelli, Alicia Keow, Daniel T. Gaebele, Jeff Grasberger, Steven J. Spencer, Johannes Spinneken, Vincent S. Neary, and Brek Meuris. Co-design of a wave energy converter for autonomous power. In *15th IFAC Conference on Control Applications in Marine Systems, Robotics and Vehicles (IFAC-CAMS)*, volume 58, pages 446–451, Blacksburg, VA, September 2024. IFAC. doi: 10.1016/j.ifacol.2024.10.094. URL https://www.sciencedirect.com/science/article/pii/S2405896324018494

C62. Tanvir Alam Shifat, **Ryan Coe**, Giorgio Bacelli, and Ted K.A. Brekken. Constrained pseudo-PI linear control of a wave energy converter via model predictive control. In *15th IFAC Conference on Control Applications in Marine Systems, Robotics and Vehicles (IFAC-CAMS)*, volume 58, pages 398–403, Blacksburg, VA, September 2024. IFAC. doi: 10.1016/j.ifacol.2024.10.086. URL https://www.sciencedirect.com/science/article/pii/S240589632401841X

C61. BEST PAPER AWARD Ding Peng Liu, Lance Manuel, and **Ryan G. Coe**. On extending the life of floating offshore wind turbines via sheltering effects of upstream wave energy converters. In *Proceedings of the ASME 2024 43th International Conference on Ocean, Offshore and Arctic Engineering (OMAE2024)*, volume Volume 2: Structures, Safety, and Reliability of *International Conference on Offshore Mechanics and Arctic Engineering*, page V002T02A053, Singapore, June 2024. ASME. doi: 10.1115/OMAE2024-139214. URL https://doi.org/10.1115/OMAE2024-139214

C60. Daniel T. Gaebele, Carlos A. Michelén Ströfer, Michael C. Devin, Jeff T. Grasberger, **Ryan G. Coe**, and Giorgio Bacelli. Incorporating Empirical Nonlinear Efficiency Into Control Co-Optimization of a Real World Heaving Point Absorber Using WecOptTool. In *Proceedings of the ASME 2023 42nd International Conference on Ocean, Offshore and Arctic Engineering (OMAE2023)*, volume 8: Ocean Renewable Energy, page V008T09A067, Melbourne, Australia, June 2023. doi: 10.1115/OMAE2023-103899. URL https://doi.org/10.1115/OMAE2023-103899

C59. Alejandro Crespo, Bonaventura Tagliafierro, Iván Martínez-Estévez, José Domínguez, Maite deCastro, Moncho Gómez-Gesteira, Corrado Altomare, Moisés Brito, Francisco Bernardo, Rui Ferreira, Salvatore Capasso, Giacomo Viccione, Nicolas Quartier, Vasiliki Stratigaki, Peter Troch, Irene Simonetti, Lorenzo Cappietti, Malin Göteman, Jens Engström, Giorgio Bacelli, **Ryan Coe**, Georgios Fourtakas, and Peter Stansby. On the state of the art of CFD simulations for wave energy converters within the open-source numerical framework of DualSPHysics. In *Proceedings of the 15th European Wave and Tidal Energy Conference (EWTEC2023)*, Bilbao, Spain, September 2023. doi: 10.36688/ewtec-2023-145. URL https://doi.org/10.36688/ewtec-2023-145

C58. Carlos Michelén Ströfer, **Ryan Coe**, Daniel Gaebele, Courtney Beringer, Bret Bosma, Bryson Robertson, Giorgio Bacelli, and Michael Devin. Control co-design and uncertainty analysis of the LUPA's PTO using WecOptTool. In *Proceedings of the 15th European Wave and Tidal Energy Conference (EWTEC2023)*, volume 15, Bilbao, Spain, September 2023. doi: 10.36688/ewtec-2023-288. URL https://doi.org/10.36688/ewtec-2023-288

C57. Jeff T. Grasberger, **Ryan G. Coe**, Jonathan Bird, Giorgio Bacelli, Alex Hagmüller, and Carlos Michelén Ströfer. Maximizing wave energy converter power extraction by utilizing a variable negative stiffness magnetic spring. In *Proceedings of the 15th European Wave and Tidal Energy Conference (EWTEC2023)*, volume 15, Bilbao, Spain, September 2023. doi: 10.36688/ewtec-2023-510. URL https://doi.org/10.36688/ewtec-2023-510

C56. Mark Bruggemann, Graham Penrose, Johannes Spinneken, Vincent S. Neary, Carlos A. Michelen, Seongho Ahn, and **Ryan G. Coe**. Beta-version Testing and Demonstration of the Design Load Case Generator: A Web-based Tool to Support IEC 62600-2 Standard Design. In *Proceedings of the 15th European Wave and Tidal Energy Conference (EWTEC2023)*, Bilbao, Spain, September 2023. doi: 10.36688/ewtec-2023-419. URL https://doi.org/10.36688/ewtec-2023-419

C55. Madelyn G. Veurink, Wayne W. Weaver, Rush D. Robinett, David G. Wilson, Giorgio Bacelli, and **Ryan G. Coe**. Wave energy converter direct drive power-take-off power electronic design to maximize power production. In *2023 IEEE 24th Workshop on Control and Modeling for Power Electronics (COMPEL)*, pages 1–7, Ann Arbor, MI, June 2023. IEEE. doi: 10.1109/COMPEL52896.2023.10221126. URL https://ieeexplore.ieee.org/document/10221126

C54. Roger Basu, Krish Thiagarajan Sharman, **Ryan G. Coe**, and Tobias Dewhurst. A review of standards for the blue economy – gaps & challenges. In *SNAME Maritime Convention*, SNAME Maritime Convention, Houston, TX, USA, 09 2022. doi: 10.5957/SMC-2022-061. URL https://doi.org/10.5957/SMC-2022-061. D011S005R001

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In-prep

- Jeff Grasberger, Daniel T. Gaebele, Carlos A. Michelén Ströfer, Giorgio Bacelli, and **Ryan G. Coe**. Designing a small OSWEC for PACWAVE. In *Proceedings of UMERC2025*, 2025
- **Ryan G. Coe**, Jeff Scruggs, Daniel Gaebele, Giorgio Bacelli, and Umesh A. Korde. WEC co-design: When damping is a good thing. *TBD*, 2025

Patents

Granted

P6. Umesh Korde, **Ryan G. Coe**, and Giorgio Bacelli. Tubular wave power device. URL https://patents.google.com/patent/US12129820B1

P5. Giorgio Bacelli, Dominic Forbush, Steven J. Spencer, **Ryan G. Coe**, and David G. Wilson. A self-tuning WEC controller for changing sea states. URL https://patents.google.com/patent/US11703027B1

P4. David G. Wilson, Giorgio Bacelli, **Ryan Geoffrey Coe**, Rush D. Robinett, and Ossama Abdelkhalik. Nonlinear hydrostatic control of a wave energy converter. URL https://patents.google.com/patent/US11326574B2

P3. Ossama Abdelkhalik, Rush D. Robinett, Shangyan Zou, David G. Wilson, Giorgio Bacelli, Umesh Korde, and **Ryan G. Coe**. Model predictive control of parametric excited pitch-surge modes in wave energy converters. URL https://patents.google.com/patent/US10415537B2

P2. Ossama Abdelkhalik, Giorgio Bacelli, Shangyan Zou, Rush D. Robinett, David G. Wilson, and **Ryan G. Coe**. Pseudo-spectral method to control three-degree-of-freedom wave energy converters. URL https://patents.google.com/patent/US10344736B2

P1. Ossama Abdelkhalik, Shangyan Zou, Rush D. Robinett, David G. Wilson, Giorgio Bacelli, **Ryan Geoffrey Coe**, and Umesh Korde. Multi-resonant feedback control of multiple degree-of-freedom wave energy converters. URL https://patents.google.com/patent/US10488828B2

Pending

- Giorgio Bacelli, Jantzen Lee, Steve Spencer, **Ryan Coe**, Alicia Keow, Kevin Dullea, Johannes Spinneken, Damian Gallegos-Patterson, Tim Donnelly, Al Plueddemann, John Reine, Derek Buffitt, Alex Franks, and Umesh Korde. Pitch resonator wave energy converter

Service, honors, & certificates

- **Editor/organizer:**
  - Associate Editor (2017-present), *Journal of Waterway, Port, Coastal, and Ocean Engineering*, https://ascelibrary.org/journal/jwped5
  - Section Board Member (2021-present), *Energies*, https://www.mdpi.com/journal/energies
  - Associate Editor (2024-present), *Journal of Ocean Engineering and Marine Energy*, https://link.springer.com/journal/40722
  - Associate Editor (2024-present), *Journal of Offshore Mechanics and Arctic Engineering*, https://asmedigitalcollection.asme.org/offshoremechanics
  - Convener (2020-2024), IEC TC 114/MT 62600-2 ("Design requirements for marine energy systems"), https://www.iec.ch/dyn/www/f?p=103:14:5246482804475::::FSP_ORG_ID,FSP_LANG_ID:5893,25
  - Session organizer (2022), Design and Control of Ocean Wave Energy Converters, The 16th International Conference on Motion and Vibration Control (MoViC 2022), https://ifacms-movic2022.seas.ucla.edu/home/
  - Guest Editor (2020-2022), Special Issue on Probabilistic Long-Term Extreme Conditions using Metocean Data, *Ocean Engineering*, https://www.journals.elsevier.com/ocean-engineering/call-for-papers/probabilistic-long-term-extreme-conditions
  - Co-organizer (2018-present), A Benchmarking Exercise on Estimating Extreme Environmental Conditions ("EC Benchmark"), https://github.com/ec-benchmark-organizers/ec-benchmark

  - Co-organizer (2017-2020), WEC Control Competition (WECCCOMP), http://www.eeng.nuim.ie/coer/wec-control-competition-released/
  - Topic Organizer (2017, 2025), Session Chair (2015, 2016, 2017, 2018, 2019), ASME Offshore Mechanics and Arctic Engineering Conference (OMAE)

- **Societies/committees:**
  - Subject-Matter Expert (2016-2020), IEC TC 114/MT 62600-2 ("Design requirements for marine energy systems")
  - Member (2006-2019), SNAME/ASNE
  - T&R panel member (2014-2019), SNAME EC-12 ("Ocean Renewable Energy")

- **Paper reviewer:** *Applied Ocean Research*; *Applied Energy*; *Applied Sciences*; *Electronics*; *Fluids*; *International Journal of Marine Energy*; *Energies*; *Ocean Engineering*; *Journal of Offshore Mechanics and Arctic Engineering*; *IEEE Transactions on Sustainable Energy*; *IEEE Transactions on Control Systems Technology*; *IEEE Transactions on Robotics*; *IEEE/ASME Transactions on Mechatronics*; *Journal of Fluids and Structures*; *Journal of Ocean Engineering and Marine Energy*; *Journal of Marine Science and Engineering*; *Renewable and Sustainable Energy Reviews*; Marine Energy Technology Symposium (METS); Offshore Mechanics and Arctic Engineering Conference (OMAE); European Wave and Tidal Energy Conference (EWTEC); IFAC Conference on Control Applications in Marine Systems, Robotics, and Vehicles (CAMS)

- **Honors:** IEC 1906 award (2024); Sandia Up & Coming Innovators Award (2017); Pratt Graduate Fellowship (2011, 2012); Virginia Space Grant Consortium Graduate Fellowship (2011, 2012); American Society of Navel Engineers (ASNE) Graduate Scholarship (2009); Society of Naval Architects and Marine Engineers (SNAME) Undergraduate Scholarship (2008); Virginia Tech College of Engineering Scholarship (2006)

- **Certificates:**
  - Virginia Tech Future Professoriate Certificate (2013)
    https://graduateschool.vt.edu/transformative-graduate-education-experience/future-professoriate/future-professoriate-certificate.html
  - Engineer in Training (2009)

Invited seminars, teaching

- Lead instructor, Introduction to Ocean Engineering (AOE2204), Virginia Tech, Blacksburg, VA, 2012.
- Workshops, seminars, & guest lectures
  - "Control and system design of wave energy converters," seminar for University of Michigan Controls seminar, April 4, 2024 https://ece.engin.umich.edu/event/invited-speaker-title-and-abstract-forthcoming-21.
  - "Design of wave energy converters using impedance matching principles," seminar for Virginia Tech Aerospace and Ocean Engineering Department, February 20, 2025 https://www.aoe.vt.edu/about-us/seminars/Entries/02-20-2025-seminar.html.
  - "Ocean Renewable Energy," with Jesse Roberts, remote lecture for Duke University, October 21, 2024.
  - "WEC Modeling and Controls Workshop," Oregon State University, Corvallis, OR, May 13–17, 2024, https://teamer-us.org/workshops/wec-modeling-controls-workshop/.
  - "Using waves to power oceanographic science," keynote for the North Carolina Renewable Ocean Energy Symposium, Coastal Studies Institute, Wanchese, NC, April 8, 2024.
  - "Design, modeling, and control of wave energy converters," Woods Hole Oceanographic Institute, April 4, 2023.
  - "Ocean Renewable Energy," with Jesse Roberts, remote lecture for Duke University, January 18, 2023.
  - "Design, modeling, and control of wave energy converters," University of Minnesota, October 19, 2022, https://cse.umn.edu/me/events/departmental-seminar-ryan-coe.

  - "Control Co-design of Wave Energy Converters," with Giorgio Bacelli, The 16th International Conference on Motion and Vibration Control (MoViC 2022), Sept. 8, 2022.
  - "Ocean Renewable Energy," with Jesse Roberts, remote lecture for Duke University, October 11, 2021.
  - "Practical approaches to modeling and control design for a wave energy converter," with Giorgio Bacelli and Umesh Korde, OMAE2021 short course, June 17-18, 2021, https://event.asme.org/OMAE-2021/Program/Short-Courses.
  - "Applied WEC modeling and control design," with Giorgio Bacelli, remote lecture for Virginia Tech. Oct. 29, 2020.
  - "Applied WEC modeling and control design," remote lecture for University of Massachusetts, Amherst, MIE 597CE/ 697CE Ocean Renewable Energy. Oct. 29, 2020.
  - "Wave energy converters," remote lecture for NAVSEA-Carderock summer intern students, June 30, 2020 and July 28, 2020.
  - "Integrated WEC design: theory and practice," with Giorgio Bacelli and Ted Brekken. Pacific Marine Center Workshop. Corvallis, OR. Feb. 3-4, 2020, https://www.pmec.us/wec-design-workshop.
  - "WPTO Support to Testing," panel discussion with Jonathan Colby, Steve DeWitt, Lauren Moraski, and Brian Polagye. U.S. Department of Energy's Water Power Program 2019 Peer Review. Washington, DC. October 8, 2019.
  - "Relevance to industry commercialization", IMREC, Washington, D.C., April 1, 2019.
  - "WEC design practices and tools," with Kelley Ruehl and Yi-Hsiang Yu, OMAE short course. Madrid, Spain. June 16, 2018, https://archive.asme.org/events/omae2018/program/short-courses.
  - "Environmental characterization and design response analysis for MHK." DOE Executive Summit on Marine and Hydrokinetic Research and Development. Washington, DC. April 2, 2016.
  - "Design response modeling for wave energy converters." University of Maine. Orono, Maine. April 29, 2016.

- Virginia Tech Future Professoriate Certificate, Virginia Tech, Blacksburg, VA, 2013.
  https://graduateschool.vt.edu/transformative-graduate-education-experience/future-professoriate/future-professoriate-certificate.html
- Teaching assistant, Experiments For Ocean Vehicle Design (AOE4205, AOE4206), Virginia Tech, Blacksburg, VA, 2009-2013.

Mentoring

Post-docs

- Jantzen Lee, 2023-present
- Alicia Keow, 2021-present
- Jorge Leon, 2020-2022
  R&D engineer, Sandia National Labs
- Daniel Gaebele, 2021-2023
  R&D engineer, Sandia National Labs
- Dominic Forbush, 2019-2021
  R&D engineer, Sandia National Labs
- Hancheol Cho, 2017-2019
  Assistant Professor, Embry-Riddle Aeronautical University.

Graduate students

- Becca McCabe (Cornell University, PhD) - committee member, 2023-present
- Jarrah Orphin (University of Tasmania, PhD) – external examiner, 2020
  Uncertainty in Hydrodynamic Model Test Experiments of Wave Energy Converters
  https://figshare.utas.edu.au/ndownloader/files/40978802
- Hannah Mankle (Oregon State University, MS) – committee member, 2019-2021
  Advanced Computational Modeling and Design of Wave Energy and Floating Offshore Wind Energy Technologies
  https://ir.library.oregonstate.edu/concern/graduate_thesis_or_dissertations/41687q926

Student interns

- Elaine Liu (Stanford University, MS student), 2024
  Graduate student, Stanford University
- Andrea Galvan (University of Texas at El Paso, junior), 2023
  Graduate student, Industrial and Systems Engineering, Virginia Tech
- Gabriel Fuentes (University of Texas at El Paso, sophomore), 2023
- Anwi Fomukong (University of New Mexico, freshman), 2021-2022
  R&D intern, Sandia National Labs
- Sean Pluemer (University of New Mexico, senior), 2020-2021
- Nicholas Ross (University of New Mexico, freshman), 2020-2021
- Delaney Heileman (University of New Mexico, junior), 2019-2021
  ORISE fellow
- Sabrina Spracklen (US Naval Academy, junior), 2020
- Preston Rhodes (US Naval Academy, junior), 2020
- John Quinlan (University of New Mexico, junior), 2019
  R&D engineer, Sandia National Laboratories
- Francisco Colorbio (University of Texas at El Paso, junior), 2019
  Mechanical/test engineer, White Sands Missile Range
- Zach Morrell (University of New Mexico, junior), 2019
  Graduate student, University of Chicago
- Bibiana Seng (University of New Mexico, senior), 2017-2018
  Quality Assurance Engineer, Fringe
- Tyler Esterly (University of New Mexico, senior), 2016-2017
  R&D Software Developer, Sandia National Laboratories
- Jarred Canning (University of Texas at Austin, MS student), 2016-2017
  Energy Storage Engineer, RES
- Sam Edwards (University of Michigan, PhD student), 2017
  Naval Architect, Naval Surface Warfare Center, Carderock Division (NSWCCD)
- Lori Smith (Virginia Tech, junior), 2017
- Austin Berrier (Virginia Tech, senior), 2017
- Zach Stuart (University of New Mexico, PhD student), 2017
- Chris Sharp (Oregon Statue University, PhD student), 2016
  Associate Professor of Mechanical Engineering at George Fox University
- Alex Campbell (University of Wisconsin-Madison, MS), 2014
  Senior Scientist, Areté

Work experience

- 2019 - present: Principal Member of the Technical Staff
  Water Power Technologies Department, Sandia National Labs, Albuquerque, NM
- 2014 - 2019: Senior Member of the Technical Staff
  Water Power Technologies Department, Sandia National Labs, Albuquerque, NM
- 2013 - 2014: Postdoctoral Researcher
  Water Power Technologies Department, Sandia National Labs, Albuquerque, NM
- 2012: Lead Instructor
  Department of Aerospace and Ocean Engineering, Virginia Tech, Blacksburg, VA
- 2009 - 2013: Graduate Research Assistant
  Department of Aerospace and Ocean Engineering, Virginia Tech, Blacksburg, VA
- 2009 - 2013: Teaching Assistant
  Department of Aerospace and Ocean Engineering, Virginia Tech, Blacksburg, VA
- 2008: Systems Engineer (summer internship)
  Northrop Grumman, Newport News, VA
- 2007: Manufacturing Engineer (summer internship)
  Northrop Grumman, Newport News, VA

Popular media

- Bench testing a Wave Energy Converter for the Ocean Observatories Initiative Pioneer Array, August 26, 2024 https://youtu.be/ic-ivEF9eTs?si=ZNPsI-zRR2tTFxU1
- Co-designing the future of wave energy: Sandia researcher presents at NCROEP, May 22, 2024
  https://energy.sandia.gov/news/sandia-researcher-presents-at-ncroep
- Sandia makes waves at White House Demo Day March 7, 2024
  https://energy.sandia.gov/news/sandia-makes-waves-at-white-house-demo-day
- The WaveBot goes to Carderock, February 21, 2024
  https://energy.sandia.gov/news/the-wavebot-goes-to-carderock
- The Pioneer Array: Harnessing Wave Power to Collect Ocean Data, November 29, 2023
  English: https://youtu.be/PsNvlGnm59o?si=5yRf28tHVcv-roRM
  Español: https://youtu.be/Tx8KqHqVaDk?si=stCu1js_fLxeenA3
- Sandia Wave Energy Power Take-off (SWEPT) Lab Testing with AquaHarmonics, November 6, 2023
  https://youtu.be/rMaL9X5v-YU?si=QR940Of44INgppwF
- Wave to wire — a patented approach, September 20, 2023
  https://energy.sandia.gov/news/wave-to-wire-a-patented-approach
- Sandia Interactive Wave Energy Education Display, September 2, 2021
  https://youtu.be/PcOHZWLTsHc?si=NGp4rf0F3hlPLWnm
- Celebrating Ocean Month with Ryan Coe, June 22, 2020
  https://www.energy.gov/articles/celebrating-ocean-month-ryan-coe
- FOSWEC Modeling and Control Design Testing, August 31, 2020
  https://youtu.be/OUxbaEC2K6Y
- Sandia Wave Energy Power Takeoff (SWEPT) Lab, April 22, 2019
  https://youtu.be/IQgPLUfttN8

- New Lab Offers Mobile, Specialized Testing for Wave Energy Converter Power Take-Off Systems, February 13, 2019
  https://energy.sandia.gov/new-lab-offers-mobile-specialized-testing-for-wave-energy-converter-power-take-off-systems/
- Advances in WEC Dynamics and Controls, February 6, 2019
  https://youtu.be/c4npWk_-Pjk
- Using Robotics to Absorb the Power of Ocean Waves, November 13, 2017
  https://www.ecomagazine.com/news/oceans/using-robotics-to-absorb-the-power-of-ocean-waves
- Riding along on the crest of a wave, November 3, 2017
  https://portal.engineersaustralia.org.au/news/riding-along-crest-wave
- Sandia researchers double wave energy converters' efficiency, November 1, 2017
  https://dailyenergyinsider.com/news/8786-sandia-researchers-double-wave-energy-converters-efficiency/
- Sandia Engineers Increase Efficiency of Wave Energy Converters, October 30, 2017
  https://www.renewableenergymagazine.com/ocean_energy/sandia-engineers-increase-efficiency-of-wave-energy-20171030
- Sandia and U.S. Navy Team Up on Wave Energy Testing, August 22,2017
  https://youtu.be/XCB12Het4c4
- 360° Video: Wave Energy Testing at the Navys MASK Basin, August 17, 2017
  https://youtu.be/WDuIg8nVtS8
- Surfing USA in the Name of Science, October 17, 2016
  https://www.afcea.org/content/Blog-surfing-usa-name-science
- Will a 12 million-gallon tank lead to better wave energy converters?, October 17, 2016
  https://www.ebmag.com/will-a-12-million-gallon-tank-lead-to-better-wave-energy-converters-19216/
- Wave energy researchers dive deep to advance clean energy source, October 13, 2016
  https://www.eurekalert.org/pub_releases/2016-10/ddoe-wer101316.php
- Sandia National Laboratories Uses Its Wave Energy Converter (WEC) to Harness the Motion of the Ocean, August 1, 2016
  https://vimeo.com/177122991

Professional references

- Mr. Bill McShane
  Technology Manager, Water Power Technologies Office, US Department of Energy, Washington, DC
  202-586-6396, william.mcshane@ee.doe.gov
- Dr. Bryson Robertson
  Associate Professor, Civil & Construction Engineering, Co-Director, Pacific Marine Energy Center, Oregon Statue University, Corvallis, OR
  541-737-8286, bryson.robertson@oregonstate.edu
- Dr. Giorgio Bacelli
  Research Engineer, Water Power Technologies Department, Sandia National Labs, Albuquerque, NM
  505-284-8373, giorgio.bacelli@sandia.gov
- Dr. Peter Kobos
  Manager, Water Power Technologies Department, Sandia National Labs, Albuquerque, NM
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- Dr. Michael Lawson
  Group Research Manager III, Water Power Program, The National Renewable Energy Laboratory (NREL), Golden, CO
  303-384-7196, michael.lawson@nrel.gov

- Mr. Miguel Quintero
  Naval Surface Warfare Center, Carderock, West Bethesda, MD
  301-227-8047, miguel.quintero1@navy.mil
- CDR. Andrew Gish, PhD
  Assistant Professor, US Naval Academy, Annapolis, MD
  410-293-6312, gish@usna.edu
- Dr. Umesh Korde
  Research Professor, Johns Hopkins University, Baltimore, MD
  410-516-1138, ukorde1@jhu.edu