

# RON BUCKMIRE

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## Education

Terminal Degree: Mathematics Ph.D., 1994, Rensselaer Polytechnic Institute, Troy, New York  
Thesis Title: *The Design of Shock-Free Transonic Slender Bodies*  
Advisors: Donald W. Schwendeman and Julian D. Cole

## Professional Experience

<b>Occidental College</b> <i>Full Professor of Mathematics</i>	<b>August 2023 to present</b>
<b>Occidental College</b> <i>On Paid Sabbatical and Visiting Research Faculty at ICERM (Brown University)</i>	<b>August 2022 to August 2023</b>
<b>Occidental College</b> <i>Associate Dean for Curricular Affairs and Director of the Core Program</i>	<b>August 2018 to August 2022</b>
<b>National Science Foundation</b> <i>Lead Program Director, NSF Scholarships in Science, Technology, Engineering and Mathematics (S-STEM), in Division of Undergraduate Education</i>	<b>August 2016 to August 2018</b>
<b>Occidental College</b> <i>Full Professor of Mathematics (promoted in Spring 2014) Interim Department Chair (Spring 2015, Fall 2015, Spring 2016)</i>	<b>August 2013 to Summer 2016</b>
<b>National Science Foundation</b> <i>(Rotator) Program Officer in Division of Undergraduate Education</i>	<b>August 2011 to August 2013</b>
<b>Occidental College</b> <i>Assistant and Associate Professor of Mathematics (tenured and promoted in Summer 2004)</i>	<b>August 1996 to August 2011</b>
<b>Occidental College</b> <i>Department Chair, Mathematics</i>	<b>May 2005 to July 2010</b>
<b>Occidental College</b> <i>Minority Postdoctoral Scholarship-in-Residence</i>	<b>August 1994 to August 1996</b>

## Awards

- [2023 Elected Fellow of the Society for Industrial and Applied Mathematics \(SIAM\)](#)
- 2019-2020 American Council of Academic Deans (ACAD) 75<sup>th</sup> Anniversary Fellow
- 2018 Selected by Mathematically, Gifted and Black ([February 3, 2018](#))
- 2012 National Science Foundation Director's Award for Collaborative Integration (presented to the EHR-MPS Cross-Directorate Team)

- 2011 Educator of the Year (National Organization of Gay and Lesbian Scientists and Technical Professionals)

### Grants

- **\$505,000.** Howard Hughes Medical Institute Inclusive Excellence 3 (HHMI IE3) Institutional Grant. 2022. Principal Investigator.
- **\$29,975.** Mathematical Association of America National Research Experience for Undergraduates Program (NREUP). 2022. *Co-Principal Investigator.*
- **\$1,000,000.** NSF Scholarships in STEM, DUE-2030763, "Creating Opportunities for High Achieving Students in Science and Mathematics through Scholarships, Research Experiences, Leadership, and Community." 2020. *Co-Principal Investigator.*
- **\$606,191.** NSF Scholarships in STEM, DUE-1457943, "Creating Opportunities in Science and Mathematics for Occidental Students (COSMOS)." 2015. *Principal Investigator.*
- **\$6,000.** MAA Tensor-SUMMA grant to work with The Algebra Project and Young Peoples' Project in Los Angeles. 2010. *Principal Investigator.*
- **\$6,000.** MAA Tensor-SUMMA grant to work with The Algebra Project and Young Peoples' Project in Los Angeles. 2009. *Principal Investigator.*

### Books

1. **R. Buckmire** and J. Libertini (editors). "[\*Improving Applied Mathematics Education.\*](#)" Springer Nature: Switzerland, 2021, xiv+ 85pp.
2. O. Ortega, R. Wilson, C. Ashley, **R. Buckmire**, D. Cooper and M. Jackson (organizers). "[\*Math & Racial Justice: the role of Mathematics in Today's Movement for Racial Justice.\*](#)" Mathematical Sciences Research Institute, 2022, 114pp.

### Publications (Research)

1. T. Basu, **R. Buckmire**, and O. Tweneboah. "An Application of Machine Learning to College Admissions: The Summer Melt Problem." *Journal of Machine Learning for Modeling and Computing*, Volume 3, Issue 4, pp. 93–117 (2022).
2. T. Basu and **R. Buckmire**. "[\*Using Approximations of Unity in the Construction of Positivity-Preserving NSFD Schemes.\*](#)" *International Journal on Difference Equations*, Volume 15, Number 1, pp. 77-89, 2020.
3. K. Basu, T. Basu, **R. Buckmire** and N. Lal. "[\*Predictive Models of Student College Commitment Decisions Using Machine Learning.\*](#)" *Data*, Volume 4, Issue 2, (Article 65) June 2019.
4. D.A. Edwards, **R. Buckmire** and **J. Ortega-Gingrich\***. "[\*A Mathematical Model of Cinematic Box-Office Dynamics with Geographic Effects.\*](#)" *IMA Journal of Management Mathematics*, Volume 25, Issue 2, 2014, pp. 233-257.
5. Holly Zullo, Kelly Cline, Mark Parker, **Ron Buckmire**, John George, Katharine Gurski, Jacob Juul Larsen, Blake Mellor, Jack Oberweiser, Dennis Peterson, John Scharf, Richard Spindler, Ann Stewart, and Christopher Storm. "Student Surveys: What Do They Think?" In *Teaching Mathematics with Classroom Voting: With and Without Clickers*, edited by Kelly Cline and Holly Zullo. Mathematical Association of America, 2011. pp. 29-37.

6. **R. Buckmire**, **K. McMurtry\*** and R.E. Mickens. "Numerical Studies of a Nonlinear Heat Equation with Square Root Dissipative Term." *Numerical Methods for Partial Differential Equations*, Vol. 25, No. 3, (May 2009), pp. 598-609.
7. **R. Buckmire**. "Applications of Mickens Finite Differences to Several Related Boundary Value Problems." *Advances in the Applications of Nonstandard Finite Difference Schemes*. Ed. R.E. Mickens. World Scientific Publishing: Singapore. 2005. pp. 47-87.
8. **R. Buckmire**. "Application of a Mickens Finite-Difference Scheme to the Cylindrical Bratu-Gelfand Problem." *Numerical Methods for Partial Differential Equations*, Vol. 20, No. 3, (May 2004), pp. 327-337.
9. **R. Buckmire**. "Investigations of Nonstandard, 'Mickens-type,' Finite-Difference Schemes for Singular Boundary Value Problems in Cylindrical or Spherical Coordinates." *Numerical Methods for Partial Differential Equations*, Vol. 19, No. 3, (May 2003), pp. 380-398.
10. D.A. Edwards and **R. Buckmire**. "A Differential Equation Model of North American Cinematic Box-office Dynamics." *IMA Journal of Management Mathematics*, Volume 12, Issue 1, 2001, pp. 41-74.
11. **R. Buckmire**. "On the Design of Shock-free, Transonic, Slender Bodies of Revolution." AIAA Paper 98-2686, presented at the *American Institute of Aeronautics and Astronautics 2<sup>nd</sup> Theoretical Fluid Mechanics Meeting* in Albuquerque, NM (June 15-18 1998).
12. **R. Buckmire**. "A New Finite-difference Scheme for Singular Differential Equations in Cylindrical or Spherical Coordinates." *Mathematics Is For Solving Problems: A Volume in Honor of Julian Cole*. Eds. L. Pamela Cook, Victor Roytburd and Marshall Tulin. Society for Industrial and Applied Mathematics: Philadelphia. 1996. pp. 3-9.

\*indicates undergraduate student co-author

### Publications (Other)

1. C. Sawyer and **R. Buckmire**. "The Automathography: A Humanistic Autobiographical Writing Assignment for Mathematics Courses." *Journal of Humanistic Mathematics*, Volume 14 Issue 1 (January 2024), pages 54-73. Available at: <https://scholarship.claremont.edu/jhm/vol14/iss1/5>
2. **R. Buckmire**, C. Diaz Eaton, J. E. Hibdon Jr., K.M. Kinnaird, D. Lewis, J. Libertini, O. Ortega, R.Roca, and A. R. Vindas-Meléndez. "[On definitions of 'mathematician.'](#)" *Journal of Humanistic Mathematics*, Volume 13 Issue 2 (July 2023), pages 8-38. [doi://10.5642/jhummath.ZRUZ1463](https://doi.org/10.5642/jhummath.ZRUZ1463). Available at: <https://scholarship.claremont.edu/jhm/vol13/iss2/4>
3. **R. Buckmire**, A. Folsom, C. Goff, A. Hoover, J. Nakao, and K.A. Sather-Wagstaff. "[On Best Practices for the Recruitment, Retention, and Flourishing of LGBTQ+ Mathematicians.](#)" *Notices of the American Mathematical Society*, Vol. 70, No. 6, June/July 2023, pp. 979-985.
4. **R. Buckmire** and A. Roca. "Queer Science Blogs: Public communication before the age of social media." In *Queering Science Communication: Representation, Theory and Practice* (Eds: Lindy A. Orthia and Tara Roberson). Bristol University Press, 2023, pp. 104-106.
5. P. Seshaiyer and **R. Buckmire**. "[Justice, Equity, Diversity, and Inclusion in Applied Mathematics for All.](#)" *SIAM News*, December 2021.
6. A. Bonato, J. Bruce, and **R. Buckmire**. "[Spaces for All: The Rise of LGBTQ+ Mathematics Conferences.](#)" *Notices of the American Mathematical Society*, Vol. 68, No. 6, June/July 2021, pp. 998-1003.
7. **R. Buckmire**. "Who Does The Math? On the Diversity and Demographics of the Mathematics Community in the United States." In [Improving Applied Mathematics Education](#) (eds. Ron

- Buckmire and Jessica M. Libertini). Proceedings of the 2019 ICIAM Conference in Valencia, Spain. (Springer-Verlag, 2021).
8. R. Bryant, **R. Buckmire**, L. Khadjavi and D. Lind. "[The Origins of Spectra, an Organization for LGBT Mathematicians](#)." *Notices of the American Mathematical Society*, Vol. 66, No. 6, June/July 2019, pp. 875-882.
  9. **R. Buckmire**. "[Recognizing Black and Latinx Mathematical Excellence: The Blackwell-Tapia Prize](#)." *Notices of the American Mathematical Society*, Vol. 66, No. 2, February 2019, pp. 218-220.
  10. **R. Buckmire**. "[A Survey of Significant Developments in Undergraduate Mathematics Education over the Past Decade](#)." *Notices of the American Mathematical Society*, Vol. 66, No. 1, January 2019, pp. 46-51.
  11. **R. Buckmire**, P. Gabrielle Foreman and Donna Maeda. "'Race, Gender and Justice': New Technologies and Student Empowerment." *Works and Days*, Vol. 16, No. 1/2, Spring/Fall 1998, pp. 319-332.
  12. **R. Buckmire**, P. Gabrielle Foreman and Donna Maeda. "*Race, Gender and Justice: Teaching with Technology at Occidental College*." Newsletter of the American Studies Association, Vol. 21, No.3, September 1998.
  13. **R. Buckmire**. "You Can't Get There From Here: The Impact of California's Proposition 209 On Same-Sex Marriage." *Albany Law Review*, Vol. 60, No. 5, 1997, pp. 1673-1676.

### Publications (Expository)

1. **R. Buckmire**. [Book Review] "[Shape: The Hidden Geometry of Information, Biology, Strategy, Democracy, and Everything Else](#)" by [Jordan S. Ellenberg](#). April 22, 2022. *American Mathematical Monthly*, Volume 129, Issue 6, pp. 597-600.
2. **R. Buckmire**. [Book Review] "[Poems that Solve Problems: The History and Science of Algorithms](#)" by [Chris Bleakley](#). June 26, 2021. *Mathematical Association of America (MAA) Reviews*.
3. **R. Buckmire**. [Book Review] "[Infinite Powers: How Calculus Reveals the Secrets of the Universe](#)" by [Steven Strogatz](#). January 3, 2021. *Mathematical Association of America (MAA) Reviews*.
4. **R. Buckmire**, TJ Murphy, John Haddock, and Sandra Richardson. "[The National Science Foundation Has Resources to Help You Improve the Teaching and Learning of Undergraduate Mathematics](#)." *AMS Blog on Teaching and Learning Mathematics*, November 14, 2016.
5. **R. Buckmire**. [Book Review] "[Beyond Banneker: Black Mathematicians and the Paths to Excellence](#)" by Erica N. Walker. November 4, 2016. *MAA Reviews*
6. **R. Buckmire**. "NUMB3RS: The Intersection between Mathematics and Hollywood is Not Empty." *Math Horizons*, Volume 13, Number 1, pp. 10-12 (September 2005).

### Publications (In Progress)

1. T. Basu, **R. Buckmire**, **Z. Coovadia\***, **M. Diaz\***, **D.A. Iniguez\***, **A. Scott\***. "Using Unity Approximations to Construct Nonstandard Finite Difference Schemes for Bernoulli Differential Equations." to appear, *AMS Special Edition on the Occasion of the 80th Birthday of Ronald E. Mickens*. **Accepted for Publication**.
2. C. Sawyer and **R. Buckmire**. "The Automathography: A Humanistic Autobiographical Writing Assignment for Mathematics Courses." Submitted to *Journal of Humanistic Mathematics*. **Under Review**.

3. **R. Buckmire**, B. Beeton, R. Bryant, F.Q. Gouvea, A. Phillips, D. Sullivan, and M. Wolf. "Michael Spivak: A Memorial." To appear in *Notices of the American Mathematical Society*.
4. **R. Buckmire**, J.E. Hibdon, Jr., D. Lewis, O. Ortega, J.L. Pabon, R. Roca, A.R. Vindas-Melendez. "The Mathematics of Mathematics (#MetaMath): Using Mathematics and Data Science to Analyze the Mathematical Sciences Community and Enhance Social Justice." Submitted to *American Mathematics Monthly*. **Under Review**.
5. **R. Buckmire**, J.E. Hibdon, Jr., D. Lewis, O. Ortega, J.L. Pabon, R. Roca, A.R. Vindas-Melendez. "Quantifying Inequities and Documenting Elitism): Using Mathematics and Data Science to Analyze the Mathematical Sciences Community and Enhance Social Justice." Submitted to *American Mathematics Monthly*. **Under Review**.
6. B. V. Saunders, S. Brooks, **R. Buckmire**, R. E. Vincent-Finley, F. Backeljauw, S. Becuwe, B. Miller, M. McClain, A. Cuyt. "Validated Computation of Special Functions." In preparation for *La Matematica*.

### Professional Service (Mathematics)

- *Vice President for Equity, Diversity and Inclusion*. Society for Industrial and Applied Mathematics (SIAM). January 2021 to December 2024.
- *Trustee*. [Institute for Computational and Experimental Research in Mathematics](#) (ICERM). July 2020 to June 2024.
- *Trustee (ex officio)*. [Mathematical Sciences Research Institute](#). April 2021 to March 2023.
- *Presidential appointee*. American Mathematical Society (AMS) [Committee on Equity, Diversity and Inclusion](#). July 2020 to January 2024. *Chair* until January 31, 2022.
- *Presidential appointee*. American Mathematical Society (AMS) Committee to Select Winner of the Award for Distinguished Public Service. February 2020 to January 2024.
- *Presidential appointee*. American Mathematical Society (AMS) Committee on Committees. July 2020 to February 2022.
- *Presidential appointee*. Society for Industrial and Applied Mathematics (SIAM) Membership Committee, Chair. January 2020 to December 2022.
- *Director Appointee*. [Mathematical Sciences Research Institute Human Resources Advisory Committee](#). April 2019 to March 2023. *Co-chair*, beginning March 2021.
- *Presidential appointee*. Society for Industrial and Applied Mathematics (SIAM) [Diversity Committee](#). July 2014 to present.
- *Elected Officer*. [SIAM Activity Group on Education](#), Program Director. January 2019 to December 2020.
- *Presidential appointee*. Mathematical Association of America (MAA) Committee on Minority Participation in Mathematics. January 2015 to January 2019 and January 2021 to January 2025.
- *Presidential appointee*. Society for Industrial and Applied Mathematics (SIAM) [Education Committee](#). January 2015 to January 2020.
- *Reviewer*. U.S. Department of Education, Office of Postsecondary Education (OPE). 2014 and 2015.
- *Reviewer*. National Science Foundation, Division of Mathematical Sciences (DMS). 2015, 2019, 2021, 2023.

- *Reviewer*. National Science Foundation, Division of Undergraduate Education (DUE). Regularly (on average once per year *every* year) since 1998.
- *Associate Editor*. SIAM Undergraduate Research Online (SIURO). January 2014 to January 2017.
- *Editor*. Community of Differential Equations Educators (CODEE) Journal. July 2016 to July 2020.
- *Member*. Editorial Board of *Numerical Methods for Partial Differential Equations* (NMPDEs). July 2010 to July 2022.
- *Content Review Expert*. California Department of Education 2014 Mathematics Primary Adoption. September 2013.
- *Mentor for Predoctoral Students*. National Alliance for Doctoral Studies in Mathematical Sciences. June 2014-present.
- *Volunteer Judge*. UCLA Law School's Williams Institute Moot Court Competition. At least 7 times since its inception in 2005.
- *Peer Reviewer*.
  - Applied Mathematics Letters
  - Journal of Engineering Mathematics
  - Journal of Difference Equations and Applications
  - Journal of Computational and Applied Mathematics
  - Mathematical and Computer Modelling
  - PLOS One