

## RON BUCKMIRE

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

### 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. **R. Buckmire** and A. Roca. "Queer Science Blogs: Public communication before the age of social media." To appear in *Queering Science Communication: Representation, Theory and Practice* (Eds: Lindy A. Orthia and Tara Roberson). Bristol University Press, 2023.
2. P. Seshaiyer and **R. Buckmire**. "[Justice, Equity, Diversity, and Inclusion in Applied Mathematics for All](#)." *SIAM News*, December 2021.
3. 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.
4. **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).
5. 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.
6. **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.
7. **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.
8. **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.

9. **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.
10. **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. **R. Buckmire** and T. Basu. "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. **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'.](#)" Submitted to *Journal of Humanistic Mathematics*. On [arXiv](#) 02/15/2023. **Accepted for Publication.**
3. C. Sawyer and **R. Buckmire**. "The Automathography: A Humanistic Autobiographical Writing Assignment for Mathematics Courses." Submitted to *Journal of Humanistic Mathematics*. **Under Review.**
4. **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." To appear, *Notices of the American Mathematical Society*. **Accepted for Publication.**
5. 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.
- *Reviewer.* National Science Foundation, Division of Undergraduate Education (DUE). Regularly (at least 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 present.
- *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