Elaine Cozzi

Curriculum Vitae

Department of Mathematics, Oregon State University
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Research Interests.

- Mathematical Fluid Mechanics.
- Partial Differential Equations.
- Harmonic Analysis.

Employment.

- Associate Professor, Oregon State University. September 2018 - present
- Assistant Professor, Oregon State University. September 2011 - September 2018
- Visiting Assistant Professor, Drexel University. July 2010-June 2011
- RTG Postdoctoral Fellow, Center For Nonlinear Analysis, Carnegie Mellon University. August 2007-May 2010

Education.

- University of Texas at Austin, Ph.D. in Mathematics. 2001-2007
- University of Virginia, B.A. in Mathematics and Economics. 1996-2000

Grants Awarded.

- *Behavior of Solutions to Equations of Fluid Motion.* Simons Foundation Collaboration Grant (Principal Investigator). 2016-2024
- *Applications of Harmonic Analysis to the Study of Incompressible Flow.* NSF Research Grant (Principal Investigator). 2010-2014
- *Applications of Harmonic Analysis to Incompressible Flow.* Oregon State University FRT Grant. Spring 2012
- *Solutions to Fluid Equations with Unbounded Initial Data.* Oregon State University FRT Grant. Spring 2015

Other Awards/Fellowships.

- College of Science Distinguished Service Award. Oregon State University. 2025
- Mathematics Department Graduate Student Faculty Award. Oregon State University. 2015, 2019
- Frank Gerth III Dissertation Award. UT Austin. 2007
- Frank Gerth III Teaching Excellence Award. UT Austin. 2004
- R.H. Bing Fellowship. UT Austin. Spring 2004
- Departmental Fellowship. UT Austin. Summer 2002

Papers.

- Local existence for the 2D Euler equations in a critical Sobolev space, with Nicholas Harrison, to appear in *Nonlinear Analysis.*
- Global existence of solutions to a multi-species aggregation diffusion equation, with Zackary Radke, to appear in the *Quarterly of Applied Mathematics.*

- Solutions to fluid equations in Holder spaces and uniformly local Sobolev spaces, with David Ambrose, Daniel Erickson, and James P. Kelliher, *Journal of Differential Equations*, 364: 107-151: 2023.
- Uniqueness for active scalar equations in a Zygmund space, *Asymptotic Analysis*, 130(3-4): 531-551, 2022.
- Well-posedness of the 2D Euler equations when velocity grows at infinity, with James P. Kelliher, *Discrete and Continuous Dynamical Systems, Series A*, 39(5): 2361-2392, 2019.
- The aggregation equation with Newtonian potential, with Gung-Min Gie and James P. Kelliher, *Journal of Mathematical Analysis and Applications*, 453(2): 841-893, 2017.
- Incompressible Euler equations and the effect of changes at a distance, with James P. Kelliher, *Journal of Mathematical Fluid Mechanics*, 18(4): 765-781, 2016.
- Solutions to the 2D Euler equations with velocity unbounded at infinity, *Journal of Mathematical Analysis and Applications*, 423(1): 144-161, 2015.
- The axisymmetric Euler equations with vorticity in borderline spaces of Besov type, *Journal of Dynamics and Differential Equations*, 26(4): 1095-1114, 2014.
- Vanishing viscosity in the plane for nondecaying velocity and vorticity II, *Pacific Journal of Mathematics*, 270(2): 335-350, 2014.
- On optimal estimates for the Laplace-Leray commutator in planar domains with corners, with Robert Pego, *Proceedings of the American Mathematical Society*, 139: 1691-1706, 2011.
- A finite time result for vanishing viscosity in the plane with nondecaying vorticity, *Communications in Mathematical Sciences*, 8(4): 851-862, 2010.
- Vanishing viscosity in the plane for nondecaying velocity and vorticity, *SIAM Journal on Mathematical Analysis*, 41(2): 495-510, 2009.
- An initial value problem for two-dimensional ideal incompressible fluids with continuous vorticity, *Mathematical Research Letters*, 14(4): 573-588, 2007.
- Vanishing viscosity in the plane with vorticity in borderline spaces of Besov type, with James P. Kelliher, *Journal of Differential Equations*, 235(2): 647-657, 2007.
- Incompressible fluids with vorticity in Besov spaces, Ph.D. Dissertation, The University of Texas at Austin, 2007.

Teaching Experience.

- Instructor, Foundations of Mathematics. Fall 2023, Fall 2024
- Instructor, First Experience for Math Majors. Fall 2021, Fall 2022
- Instructor, Multivariable Advanced Calculus. Spring 2021
- Instructor, Partial Differential Equations. Fall 2018, Winter 2019, Spring 2019
- Instructor, Topics in Analysis - Fluids. Spring 2018, Winter 2021, Winter 2024
- Instructor, Complex Analysis. Spring 2017
- Instructor, Systems of Ordinary Differential Equations. Winter 2017, Fall 2020, Winter 2023
- Instructor, Functional Analysis. Fall 2016, Fall 2022
- Instructor, Elements of Discrete Mathematics. Spring 2016
- Instructor, Vector Calculus II. Winter 2015
- Instructor, Discrete Math. Fall 2014, Spring 2015, Spring 2016, Fall 2017, Fall 2020
- Instructor, Real Analysis III. Spring 2014, Spring 2022
- Instructor, Real Analysis II. Winter 2014, Winter 2022
- Instructor, Real Analysis I. Fall 2013, Fall 2021
- Instructor, First Experience for Math Majors. Fall 2021

- Instructor, Linear Algebra I. Fall, 2013, Winter 2013, Fall 2015
- Instructor, Advanced Calculus II. Winter 2013, 2017, 2018, Spring 2025
- Instructor, Advanced Calculus I. Fall 2012, 2016, Winter 2014, 2018, 2025
- Instructor, Vector Calculus I. Winter 2012, Fall 2015
- Instructor, Partial Differential Equations. Fall 2011
- Instructor, Introduction to Linear Algebra. Spring 2011
- Instructor, Introduction to Mathematical Fluid Dynamics. Spring 2010
- Instructor, Introduction to Lebesgue Integration. Fall 2009
- Instructor, Principles of Mathematical Analysis II. Spring 2009
- Instructor, Principles of Mathematical Analysis I. Fall 2008
- Instructor, Calculus I. Fall 2007, Spring 2008, Winter 2011
- Instructor, Introduction to Real Analysis. Summer 2007
- Instructor, Foundations of Arithmetic for Elementary Education Majors. Spring 2006, Fall 2006, Spring 2007
- Instructor, Precalculus. Fall 2005, Summer 2006, Fall 2010
- Teaching Assistant, Calculus. Fall 2001, Spring 2002, Fall 2004
- Teaching Assistant, Discrete Math-Dean's Scholars. Spring 2004
- Teaching Assistant, Conference Course-Plan II. Spring 2003
- Supplemental Instruction Participant. Spring 2002

Invited Talks.

- AMS Special Session on Mathematical Fluid Dynamics, San Francisco State University. Spring 2024
- ICIAM Mini-symposium on Recent Advances on Regularity and Irregularity of Fluids Flows, Tokyo, Japan. Fall 2023
- AMS Special Session on Qualitative Aspects of Nonlinear PDEs: Well-posedness and Asymptotics, Georgia Tech. Spring 2023
- Partial Differential Equations Seminar, Pennsylvania State University. Spring 2023
- SIAM CSS Minisymposium on Analysis and Applications of PDEs Modeling Fluids, Stillwater, Oklahoma. Fall 2022
- Colloquium, Reed College. Winter 2022
- SIAM Conference on Analysis of Partial Differential Equations, La Quinta, California. Fall 2019
- Partial Differential Equations Seminar, University of California, Riverside. Fall 2019
- Geometry and Analysis Seminar, University of Colorado, Boulder. Spring 2019
- Partial Differential Equations and Applied Math Seminar, Drexel University. Fall 2018
- AMS Special Session on Recent Advances in Mathematical Fluid Mechanics, University of Arkansas, Fayetteville. Fall 2018
- SIAM Conference on Analysis of Partial Differential Equations, Baltimore, Maryland. Fall 2017
- AMS Special Session on Mathematical Fluid Mechanics, University of California at Riverside. Fall 2017
- MCA Special Session on Equations of Fluid Mechanics: Analysis, McGill University. Summer 2017
- Workshop on the Essence of $u \cdot \nabla u$: Reflections on Mathematical Fluid Dynamics, University of Virginia. Spring 2017
- Partial Differential Equations Seminar, Vanderbilt University. Fall 2016

- SIAM Annual Meeting, Boston, Massachusetts. Summer 2016
- Applied Partial Differential Equations Online Seminar, University of Washington. Spring 2016
- SIAM Conference on Analysis of Partial Differential Equations, Scottsdale, Arizona. Fall 2015
- Analysis Seminar, Portland State University. Spring 2015
- Center for Nonlinear Analysis Seminar, Carnegie Mellon University. Fall 2014
- Analysis Seminar, University of Oregon. Spring 2014
- SIAM Conference on Analysis of Partial Differential Equations, Lake Buena Vista, Florida. Fall 2013
- AWM Research Symposium, Santa Clara University. Spring 2013
- Colloquium, Oregon State University. Spring 2011
- Colloquium, The College of Charleston. Spring 2011
- Colloquium, The University of Kansas. Spring 2011
- Colloquium, Swarthmore College. Spring 2011
- Colloquium, Bryn Mawr College. Spring 2011
- Partial Differential Equations Seminar, Pennsylvania State University. Fall 2010
- AMS Special Session on Fluid Mechanics, University of California at Riverside. Fall 2009
- Partial Differential Equations Seminar, University of Maryland at College Park. Spring 2009
- AMS Special Session on Nonlinear Partial Differential Equations and Applications, University of Illinois at Urbana-Champaign. Spring 2009
- AMS Special Session on Nonlinear Evolution Equations of Mathematical Physics, Louisiana State University. Spring 2008
- Partial Differential Equations Seminar, Brown University. Fall 2007
- AMS Special Session on the Euler and Navier-Stokes Equations, Depaul University. Fall 2007
- Mathematics and its Applications Seminar, University of Illinois at Chicago. Spring 2007

Additional Invited Workshops.

- Workshop on Small Scale Dynamics in Incompressible Fluid Flows, American Institute of Mathematics. Fall 2023
- Workshop on Recent Advances in Hydrodynamics, Banff International Research Station. Summer 2016

Mentoring/Degree Committees.

- Undergraduate Research Mentor for: John Baldwin (Physics Senior Capstone Project (2016-2017)), Jeremy Lilly (Honors College Thesis (2018-2019)), Nicholas Zitzelberger (Honors College Thesis (2023-2025)).
- M.S. Advisor for: Andrew Farrar (2014), Zackery Reed (2015), Sayantika Nag (2016), Daniel Erickson (2018), Jeremy Lilly (2021), Hannah Barta (2021), Sahir Gill (2023), Zachary Radke (2023).
- Ph.D. Advisor for: Daniel Erickson (2022), Nick Harrison (2026 (expected)), Sahir Gill (2026 (expected)), Zachary Radke (2026 (expected)).

- Current or past member of Doctoral Committee for: Hussain Al-Hammali, Azhar Alhammali, Fernando Angulo Barba, Diba Behnoudfar, Sarah Hagen, Eleanor Holland, Fucent Hsu, Hisham Jashami, Jeremy Lilly, Jon McCollum, Praveeni Mathangadeera, Arpita Mukherjee, Madison Phelps, Zackery Reed, Firas Siala, Chuankai Song, Naren Vohra, Calvin Woods, Guochen Xu, Ayse Yiltekin, Jhih-Jyun Zeng.
- Current or past member of M.S. degree committees for: Cole Anderson, Nick Cappello, Atul Dhage, Patrick Donaghue, Alper Dumanli, Zach Gregg, Sarah Hagen, Alireza Hosseinkhan, Moayad Odeh, Madison Phelps, Jesse Rushen, Brandi Whiteman, Calvin Woods, Guochen Xu.
- Mathematics minor advisor for: Arpita Mukherjee (PhD Statistics 2019), Forrest Corcoran (PhD Civil Engineering 2024 (expected)).
- Member of Honors College Thesis Committee for: Isaac Stallcup (Spring 2018), Michael Aimonetto (Spring 2019), Sara Tro (Spring 2019)

Professional Activities/Service.

Editorial Work.

- Associate Editor, *American Mathematical Monthly.* Winter 2021-present

Conference/Session Organization.

- Co-organizer, SIAM Pacific Northwest Regional Conference, Bellingham, WA. Fall 2023
- Co-organizer, Special Session on Recent Advances in the Theory of Fluid Dynamics, Western Sectional Meeting of the AMS. Fall 2022
- Co-organizer, Thematic Session on Recent Advances in Mathematical Fluid Mechanics, SIAM Pacific Northwest Regional Conference, Vancouver, WA. Spring 2022
- Co-organizer, (Virtual) Special Session on Recent Advances in the Theory of Fluid Dynamics, Western Sectional Meeting of the AMS. Fall 2020
- Co-organizer, SIAM Pacific Northwest Regional Conference, Corvallis, OR. Fall 2017
- Co-organizer, Thematic Session on Applied Analysis and Fluids, SIAM Pacific Northwest Regional Conference, Corvallis, OR. Fall 2017
- Co-organizer, Special Session on Equations of Fluid Motion. Joint Mathematics Meetings of the AMS. Spring 2016
- Co-organizer, Special Session on Nonlinear Partial Differential Equations of Fluid and Gas Dynamics. Western Sectional Meeting of the AMS. Spring 2012

Other Service to the Profession.

- Member, SIAM Committee on Section Activities. Winter 2025 - present
- Treasurer, SIAM Pacific Northwest Section. Spring 2022 - Spring 2024
- Reviewer for Simons Foundation Collaboration Grants for Mathematicians Program.
- Referee for *Journal of Mathematical Analysis and Applications*, *Advances in Difference Equations*, *SIAM Journal on Mathematical Analysis*, *Electronic Journal of Differential Equations*, *Nonlinearity*, *Physica D*, *International Mathematics Research Notices*, *Rocky Mountain Journal of Mathematics*, *Journal of Differential Equations*.
- NSF Applied Analysis Panel Member.

Department Service (OSU Mathematics).

- Assistant Head. Winter 2023-Winter 2024, Fall 2024-present
- Graduate Committee. Fall 2024-present
- Undergraduate Assessment Co-Lead. Fall 2022-Spring 2023
- Undergraduate Assessment Lead. Fall 2018-Spring 2019, Fall 2021-Spring 2022, Fall 2023 - present
- Lead Undergraduate Advisor. Summer 2021-Fall 2022
- Analysis Assistant Professor Search Committee. Fall 2021-Spring 2022
- Strategic Planning-Steering Committee. Fall 2018-Spring 2019
- Chair, Curriculum and Programs Working Group for Strategic Planning. Winter 2019-Spring 2019
- Chair, Undergraduate Curriculum Committee. Fall 2018-Spring 2019
- Qualifying Exam Committee. Fall 2017-Fall 2018, Winter 2021-Summer 2021
- Advisory Committee. Fall 2016-Spring 2019, Fall 2021-Spring 2022, Fall 2024-present
- Undergraduate Curriculum Task Force. Fall 2013
- Hiring Task Force. Fall 2013-Spring 2014
- Undergraduate Committee. Fall 2013-Spring 2019, Fall 2021, Winter 2022
- Co-Organizer, Undergraduate Seminar. Fall 2013-Spring 2015
- Organizer, Analysis Seminar. Winter, Spring 2013-2016, Fall 2021-Spring 2022
- Graduate Advisor. Fall 2012-Spring 2013
- Faculty Advisor, OSU AWM Student Chapter. Fall 2011-Spring 2015
- Faculty Advisor, OSU SIAM Student Chapter. Fall 2011-Spring 2015
- Undergraduate Advisor. Fall 2015-Spring 2017, Fall 2020-Spring 2021

Service to the College of Science (OSU).

- Acting Associate Dean of Academic and Student Affairs. March 2024-July 2024
- Joel Davis Faculty Scholar Nomination Committee. Spring 2022
- Mathematics Department Head Search Committee. 2015, 2018, 2023
- Advising Renovation Implementation Committee. Sept 2024 – Jan 2025

University Service (OSU).

- General Education Reform - Faculty Mentor, Quantitative Literacy and Analysis Workgroup on Learning Outcomes, Criteria, and Rationale. Fall 2022-Spring 2023
- Graduate School Awards Committee. Spring 2023
- Faculty Senate. Spring 2017-Fall 2018, Winter 2025-present

Other Professional Activities.

- Co-organizer, Working Group on Recent Advances in Analysis and Approximation of Fluids, Center for Nonlinear Analysis. Carnegie Mellon University. Fall 2009
- Co-organizer, Junior PDE Seminar, UT Austin. 2004-2006