

Cashous W. Bortner

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EMPLOYMENT

Assistant Professor of Mathematics
California State University, Stanislaus

August 2022 - Present

RESEARCH INTERESTS

Algebraic, combinatoric, and graph theoretic approaches to problems in biological and physical systems; parameter identifiability; graph theory.

EDUCATION

Ph.D. in Mathematics, North Carolina State University

May 2022

Thesis: "Identifiability Analysis of Two Families of ODE Models"

Advisor: Seth Sullivant

M.S. in Mathematics, North Carolina State University

May 2019

B.S. in Mathematics, University of Nebraska-Lincoln

May 2017

PUBLICATIONS & PREPRINTS

1. **Bortner, C.** & Meshkat, N. Graph-Based Sufficient Conditions for Indistinguishability of Linear Compartmental Models. *Preprint available at <https://arxiv.org/abs/2309.10861>* (Sept. 2023).
2. **Bortner, C.**, Gross, E., Meshkat, N., Shiu, A. & Sullivant, S. Identifiability of Linear Compartmental Tree Models and a General Formula for the Input-Output Equations. *Advances in Applied Mathematics* **146** (May 2023).
3. **Bortner, C.** & Sullivant, S. Structural Identifiability of Series-Parallel LCR Systems. *Journal of Symbolic Computation*. **112**, 79–104 (Sept. 2022).
4. **Bortner, C.** & Meshkat, N. Identifiable Paths and Cycles in Linear Compartmental Models. *Bulletin of Mathematical Biology*. **84**, 53 (Mar. 2022).
5. Bernstein, P., **Bortner, C.**, Coskey, S., Li, S. & Simpson, C. The Set Splittability Problem. *The Australasian Journal of Combinatorics* **75**, 190–209 (Oct. 2019).

UNDERGRADUTE RESEARCH

- *Erdős-Ko-Rado Theorem on Graphs*, Spring 2023-Present
Co-advising two undergraduate students with Dr. Jessica De Silva on a problem related to extending the Erdős-Ko-Rado Theorem from sets to graphs.
- *Indistinguishability of Linear Compartmental Cycle Models*, Fall 2023-Present
Advising two undergraduate students on the problem of determining if two linear compartmental cycle models are indistinguishable.

INVITED PRESENTATIONS

- Algebraic Approaches to Mathematical Biology, American Mathematical Society Special Session, Joint Math Meetings, San Francisco, CA, January 3-6, 2024
- Discrete, Topological, and Algebraic Methods in Mathematical Biology Special Session, American Mathematical Society Central Sectional Meeting, Creighton University, Omaha, NE, October 7-8, 2023
- SIAM Conference on Applied Algebraic Geometry, Eindhoven University of Technology, Eindhoven, The Netherlands, July 10-14, 2023 (virtual)
- Differential Algebra and Related Topics XI Conference, School of Mathematical Sciences, Queen Mary University of London, June 5-9, 2023
- California State University Long Beach Math Department Colloquium, April 21, 2023 (virtual)
- Morehead State University Math Department Colloquium, April 14, 2023 (virtual)
- Santa Clara University Math Department Colloquium, October 11, 2022
- The Speaker Series for the Quantitatively Curious Colloquium, California State University, Stanislaus, September 23rd, 2022
- Algebraic Statistics 2022, University of Hawai'i at Manoa, May 16-20, 2022

TEACHING EXPERIENCE

MATH 3400: Set Theory and Logic	Fall 2023 (20 students)
MATH 3400: Set Theory and Logic	Spring 2023 (21 students)
MATH 2300: Discrete Structures	Spring 2023 (27 students)
MATH 1070: College Algebra	Spring 2023 (35 students)
MATH 1420: Calculus II	Fall 2022 (16 students)
MATH 1410: Calculus I	Fall 2022 (25 students)

WORKSHOPS AND TRAININGS

- Organized the Algebraic Approaches to Mathematical Biology AMS Special Session, Joint Math Meetings, San Francisco, CA, January 3-6th 2024
- Near Peer Panel Panelist, CSU Stanislaus New Faculty Orientation, August 14th, 2023
- Research Experience for Undergraduate Faculty (REUF) Workshop, American Institute of Mathematics(AIM)/Institute for Computational and Experimental Research in Mathematics (ICERM), Providence, Rhode Island, August 7-11th, 2023
- CSUBIOTECH Planning Meeting, Office of the Chancellor, July 31st, 2023
- New Student Orientation Advisor, 4 Sessions, July 2023
- Central California Math Project Summer Institute: Social Justice in the Math Classroom - Putting Theory into Practice (40 hours), July 15, 17, 19, and 21st, 2023
- CSU Student Success Dashboard Workshop, April 26th, 2023
- MSRI Critical Issues in Mathematical Education: Mentoring for Equity, MSRI, March 22-24th, 2023
- STEM-NET: Becoming more than the sum of our parts conference, March 16-17th, 2023
- Measuring Teaching Effectiveness Workshop, FCETL via zoom, October 27th, 2022
- NSF S-STEM Grant Planning Meeting, October 11-12th, 2022
- Using Inquiry to Teach Mathematics and Thinking, MAA Workshop via zoom, September 29th, 2022
- MathFest, August 2022
 - Active Learning with Active Calculus Mini-course (4 hours)
 - The Role of Culturally Relevant Pedagogy and Identity Development in the Teaching and Learning of Mathematics
 - Teaching with Inquiry: Growing our Practice Together
 - How to Create Safe and Community Responsive Outreach Programs
 - Teaching and Leading towards Institutional Change

- Making Teaching Matter More: Active-learning Strategies and Barriers to Implementation
- Townhall on Latinx Mathematicians

MENTORSHIP

- Faculty Mentor Program Mentor, Fall 2022-Present
Mentoring two first-generation undergraduate students.
- Robert Noyce Teaching Scholarship Program Mentor, Fall 2023-Present
Mentoring preservice K-12 teachers who are Robert Noyce Teaching Scholars.
- Cal-Bridge Mentor, Fall 2023-Present
Co-mentoring one Cal-Bridge student with Dr. Subir Ghosh (UC Riverside) on course selection, summer research experiences, and graduate school applications.
- Stanislaus State Math Club Faculty Advisor, Fall 2023-Present

PROFESSIONAL MEMBERSHIPS AND FELLOWSHIPS

- Career and Professional Development Center Faculty Fellow, Fall 2023-Present
- CSUBIOTECH Faculty Consensus Group Representative, Summer 2023-Present
- CSU Stanislaus Grant Writing Cohort, Spring 2023-Present
- Mathematics Faculty Fellow: Catalyzing Ideas for the San Joaquin Valley: Innovating Mathematics and Chemistry Curriculum, Fall 2022-Present
- Mathematical Association of America Project NExT (New Experiences in Teaching) Fellow, Fall 2022-Fall 2023
- Mathematical Association of America (MAA), Fall 2019-Present
- American Mathematical Society (AMS), January 2022-Present
- Society for Industrial and Applied Mathematics (SIAM), Fall 2019-Present