

CSU San Marcos
 Department of Mathematics
 333 Twin Oaks Valley Rd.
 San Marcos, CA 92078

kayers@csusm.edu

EDUCATION

Ph.D. in Mathematics, Iowa State University 2015
 Dissertation: **Graph Determined Symbolic Dynamics and Hybrid Systems**.
 Adviser: Dr. Wolfgang Kliemann

B.A. in Mathematics, Bowdoin College, Brunswick, Maine 2010
 Honors Thesis: “Stochastic Perturbations of the Fitzhugh-Nagumo Equations”
 Adviser: Dr. Mary Lou Zeeman.

EMPLOYMENT

Assistant Professor, California State University San Marcos 2021 - present
Assistant Professor, Carroll College 2019 - 2021
Visiting Assistant Professor, Pomona College 2016 - 2019

HONORS AND AWARDS

Project NExT Fellow, Peach '18 Cohort 2018-2019
 Aggie Ho Research Award, Iowa State University 2015
 Graduate College Research Excellence Award, Iowa State University 2014
 Edward S. Hammond Prize, Mathematics Department, Bowdoin College 2010
 Graduated with Honors, Mathematics Department, Bowdoin College 2010

PUBLICATIONS AND PAPERS

8. K. Ayers, A. Radunskaya. “Harris irreducibility of the random logistic map.” In preparation.
7. K. Ayers, P. Hinow, A. Radunskaya. “Stabilization of quasi-periodic orbits of the random logistic map.” In preparation.
6. K. Ayers, D. Dmitrishin, A. Radunskaya, A. Stokolos. “Search for invariant sets of the generalized tent map.” Accepted in *Journal of Difference Equations and Applications*, 2022.
5. K. Ayers. “Chain Recurrence in Graph Determined Hybrid Systems”. *Journal of Dynamics and Control Systems* (2019). <https://doi.org/10.1007/s10883-019-09440-x>
4. H. Cho, K. Ayers, L. de Pillis, Y-H. Kuo, J. Park, A. Radunskaya, R. Rockne. “Modeling acute myeloid leukemia in a continuum of differentiation states.” *Letters in Biomathematics*, 5(sup1): S69-S98, 2018.

3. K. Ayers. "Graph Determined Symbolic Dynamics and Hybrid Systems," Ph.D. dissertations, Iowa State University: ProQuest/UMI, 2015
2. J. Ackerman, K. Ayers, E. Beltran, J. Bonet, D. Lu, T. Rudelius. " A behavioral characterization of Markov chains and discrete time dynamical systems over directed graphs." *Qualitative Theory of Dynamical Systems*, 13(1):161-180, 2014.
1. K. Ayers, X. Garcia, J. Kunze, T. Rudelius, A. Sanchez, S. Shao, E. Speranza. "Limit and Morse sets of deterministic hybrid systems." *Qualitative Theory of Dynamical Systems*, 12(2):335-360, 2013.

GRANTS AND FELLOWSHIPS

NSF Racial Equity in STEM Grant Addressing Enrollment Gaps in STEM Majors at an HSI Co-PI	In revision
AMS PUI Travel Grant Joint Mathematics Meetings - on hold	2022 \$2,100
NIH Research Enhancement Award (R15) Title: "The Architecture of Missing and Archaic Variation in Human Population Genomic Data" Co-PI	2021-2024 \$440,087
AIM Math Community "Little School Dynamics - A Dynamical Systems Community Projects for Researchers at PUIs" Co-PI	2020-present

PROFESSIONAL PRESENTATIONS

"A Chaotic Introduction" Route 78 Math Day	2023
"Search for invariant sets of the generalized tent map" JMM AIM Special Session on Little School Dynamics: Cool Research Done at PUIs	2023
"An Exploration of Sharkovskii's Theorem" University of San Diego Invited Colloquium Talk	2022
"Baby Sharkovskii" San Marcos Informal Mathematics In-Person Colloquium	2022
"Selected Topics in Hybrid Systems" Invited Talk, Boston Computing Group	2022

“Random Perturbations of Self-Regulating Biological Processes” JMM AWM Special Session on Women in Mathematical Biology	2022
“Harris Irreducibility of the Stochastic Logistic Map” JMM AMS Special Session on Little School Dynamics: Cool Research done at PUIs	2022
“Fixed Points, Stability, and Oscillations: How can we manipulate systems?” Invited Colloquium Talk, Cal State Long Beach	2022
“Fixed Points, Stability, and Oscillations: How can we manipulate systems?” Invited Colloquium Talk, Skidmore College	2022
“Little School Dynamics - Research at PUIs” Invited Talk, SIMIODE Expo	2022
“Random Perturbations of Self-Regulating Biological Processes” UCSD NITMB Colloquium	2021
“Fixed Points, Stability, and Oscillations: How can we manipulate systems?” San Marcos Mathematics Online Colloquium	2021
“Stochastic Logistic Maps and Invariant Distributions” Invited Graduate Seminar, University of Georgia	2021
“Stochastic Perturbations of Unimodal Maps” Invited Colloquium Talk, Cal State San Marcos	2021
“Perceiving Patterns and Chaos” Cal State San Marcos Student Seminar	2021
“Random Perturbations of Unimodal Maps” AIM Math Community - Little School Dynamics Invited Talk	2021
“Faculty Dynamics Research Opportunities - Primarily Undergraduate Institutions” Invited Panel, SIMIODE Expo	2021
“Stabilization of Quasi-Periodic Orbits of the Random Logistic Map” Invited Talk, Women in Math in Southern California Conference	2020
“Chain Recurrence in Graph Determined Hybrid Systems” MAA Contributed Paper Session, Joint Mathematics Meetings 2020	2020
“A Skew Product Model for Hybrid Dynamical Systems” Invited Colloquium Talk, University of Montana	2019
“Stochastic Perturbations of the Logistic Map.” MAA Invited Paper Session, MathFest 2019	2019
“Perceiving Patterns and Chaos” Invited Colloquium Talk, Carroll College	2019
“A Skew Product Model for Hybrid Dynamical Systems” Invited Colloquium Talk, California Polytechnic Institute, Pomona	2018
“A Chaotic Introduction” Claremont Math Weekend, Claremont, CA	2018

“Perceiving Patterns and Chaos” Invited Colloquium Talk, Colorado College	2017
“Perceiving Patterns and Chaos” Invited Colloquium Talk, Lafayette University	2017
“Perceiving Patterns and Chaos” Invited Colloquium Talk, Agnes Scott College	2017
“Skew Product Flows and Hybrid Systems” Applied Mathematics Seminar, Pomona College, CA	2017
“Skew Product Flows and Hybrid Systems” Women in Math in Southern California Conference, Los Angeles, CA	2017
“Symbolic Dynamics and Deterministic Hybrid Systems” (poster) Joint Mathematics Meetings, San Antonio, TX	2015
“Symbolic Dynamics and Deterministic Hybrid Systems” Mathematics Colloquium, University of Augsburg, Augsburg, Germany	2013

OTHER PRESENTATIONS

LatinX Center STEMInist Voices Event Invited Panelist	2023
“ASI Women in STEM Panel” Associated Students Inc. Invited Panelist	2023
“Panel Industry and Research in CSTEM” Associated Students Inc. Invited Panelist	2022
“STEM and Twitter” CSUSM oSTEM Chapter Presentation	2022
“The Math of Climate Science” Climate Teach in, CSUSM, CA	2022
“Queering Math” Mathematics Community Seminar, Department of Mathematics, Pomona College, CA	2018
“Queering Math” FoRCES Reading Group, Pomona College, CA	2017

PROFESSIONAL WORKSHOPS

Harvard Master Class Teaching Math Modeling for Life Science Teaching Math Modeling for Life Science	Summer 2023 Funded Senior Participant
CSUSM Faculty Learning Community Contemplative Pedagogy for Social Justice Contemplative Pedagogy for Social Justice	Fall 2021 Accepted Participant
ICERM Virtual Workshop Advanced Workshop in Data Science for Mathematical Sciences Faculty	June 2021 Accepted Participant
MAA Virtual Workshop How and Why Should Sustainability Be Part of What We Teach?	April 2021 Accepted Participant
Joint Mathematics Meetings, Denver, CO AWM Workshop: Moving Toward Action	January 2020 Funded Participant
Joint Mathematics Meetings, Baltimore, MD MAA Minicourse: Start Teaching Statistics using R and RStudio	January 2019 Funded Participant
Mathematical Association of America MathFest 2018, Denver CO Project NExT Participant	August 2018 Funded Participant
Iowa State University NSF-Sponsored REU Program	Summer 2009 Funded Participant

CSUSM PROFESSIONAL SERVICE

2023-2024 Math Department Search, Tenure Track Line Search Committee Member	2023-2024
Academic Senate Senator representing CSTEM	2023-present
Faculty Center Teaching and Learning Group Group member	2022-present
Climate Change Faculty Working Group Steering Committee Chair	2022 - present

Mathematics Department Reid Lecture Committee Member	2022 - present
AWM Student Chapter Faculty Advisor	2021 - present
oSTEM Chapter Faculty Advisor	2021 - present
Committee to create a new life sciences calculus Chair of Committee	Summer 2022
Cal-Bridge Program Cal State Mentor	2022 - 2023
2021-2022 Math Department Search, Tenure Track Line Search Committee Member	2021-2022
Math 132: Survey of Calculus Lead Instructor	2021-2022

OTHER PROFESSIONAL SERVICE

AWM Executive Committee Media Coordinator and Executive Committee Member	2024 - present
Jay Cummings, Long-Form Math History Textbook Editorial Board member	2023 - present
MAA SoCal-Nevada Section Chair-Elect of Section	2023-present
SIAM Conference on Applications of Dynamical Systems Mini-Symposium Organizer	2023
AMS Special Session, JMM 2023 Organizer	2023
CSU JMM, CSU Northridge Plenary Talk Chair	2022

Johns Hopkins University Press, Kyne Santos Untitled Book Book Reviewer	2022
CSU JMM Scientific Committee Committee Member	2022
AMS Special Session, JMM 2022 Organizer	2022
AMS Math Reviews Reviewer	2020-present
AWM Media Committee Member	2019-present
Pomona Academy for Youth Success (PAYS) Math Instructor	2017 - 2021
Carroll College Safe Zone Training Co-Facilitator	2021
AWM The First Fifty Years: Reminiscences, Participant History, and Visions for the Future Article Referee	2020
Carroll College Math Debate Debater: Who is the most influential mathematician who died young? (Debate Winner Representing Srinivasa Ramanujan)	2020
AMS Social, JMM 2020 Performer, Violinist	2020
JMM MAA Workshop: Identifying and Managing Microaggressions in the Academic Setting Small group discussion facilitator	2020
EDGE (Enhancing Diversity in Graduate Education) MATLAB Mini Course Instructor	2019
Project NExT Session on Math Education at 2019 JMM Facilitator	2019
AWM Strategic Task Force on Diversity and Inclusion Committee Member	2018

Pomona College 1st Annual Sonia Kovalevsky Day Organizer	2018
---	------

Nebraska Conference for Undergraduate Women in Mathematics Invited Panelist, Life in Graduate School	2013
---	------

Bowdoin College Student Math Representative	2009-2010
---	-----------

MEDIA APPEARANCES

LGBTTech PATHS In-Person Networking Event Invited Panelist	2022
---	------

My Favorite Theorem Podcast Guest	2022
--------------------------------------	------

LGBTTech PATHS Program Interview	2022
-------------------------------------	------

UNDERGRADUATE STUDENT THESIS PROJECTS

Elisa Zepeda “Random Forests for Prenatal Maternal Data”	2020-2021
---	-----------

Eisen Ipac “Population dynamics in crime dynamics modeling”	2018-2019
--	-----------

Benjamin Gregory “Symbolic dynamics of Smale’s horseshoe”	2017-2018
--	-----------

Abigail Gardner “Variation of parameters in crime dynamics modeling”	2016-2017
---	-----------

MASTER’S STUDENT THESIS PROJECTS

Alireza Pakravan “Solving PDEs Using Neural Networks”	2021-2022
--	-----------

COURSES TAUGHT

CSUSM:

Math 132 – Survey of Calculus (Fall 2021, Spring 2022)

Math 346 – Mathematical Methods of Physics (Fall 2021)

Math 350 – Foundations for Theoretical Mathematics (Fall 2022, Spring 2023, Fall 2023)

Math 362 – Differential Equations (Spring 2022)

Math 430 – Real Analysis (Spring 2023, Fall 2023)

Math 448 – Mathematical Methods in Biology (Fall 2022)

Carroll College:

Math 121 – Differential Calculus (Fall 2019, Fall 2020)

Math 122 – Integral Calculus (Spring 2020, Spring 2021)

Math 207 – Introduction to Statistics (Fall 2019, Spring 2020, Spring 2021)

Math 233 – Multivariable Calculus (Fall 2019, Fall 2020)

Math 306 – Real Analysis (Spring 2020, Spring 2021)

Math 401 – Abstract Algebra and Modern Geometry (Fall 2020)

Pomona College:

Math 30 – Differential Calculus (Spring 2018)

Math 31 – Integral Calculus (2 sections, Fall 2016, Fall 2018)

Math 32 – Multivariate Calculus (2 sections, Spring 2017, Fall 2017)

Math 58 – Introduction to Statistics (Spring 2019)

Math 60 – Linear Algebra (Fall 2017, Spring 2018)

Math 101 – Introduction to Real Analysis (Fall 2018, Spring 2019)

Math 102 – Differential Equations with Modeling (Fall 2016)

PROFESSIONAL MEMBERSHIPS

American Mathematical Society

Mathematical Association of America

Association for Women in Mathematics

National Association of Mathematicians

SACNAS

Spectra

COMPUTER SKILLS

Python

R

L^AT_EX

MATLAB

Mathematica

Git