

Jodin Morey

Home
5233 W 91st Street • Minneapolis, MN 55437
651-705-6346
moreyjc@umn.edu

University of Minnesota
206 Church St SE • Minneapolis, MN 55455
<http://math.umn.edu/~moreyjc>
ORCID ID: 0000-0001-5578-7881

Areas of Interest

My interests are in dynamical systems and mathematical physics. Specifically, I conduct research in the full two-body problem (gravitational orbits), and black hole gravity waves. I am seeking a position as lecturer and researcher. I have interest in developing mathematics curriculum for undergraduates. In particular, my goal is to use technology to make mathematics easier to learn, and more relevant to students' lives. See my Teaching Philosophy and Research Statement for more.

Education

- **Ph.D. in Mathematics**, University of Minnesota; Minneapolis MN Spring 2022
Dissertation: [Relative Equilibria of Dumbbells Orbiting in a Planar Newtonian Gravitational System](#)
Advisor: Prof. Richard Moeckel
- **MS in Mathematics**, University of Minnesota; Minneapolis MN Spring 2020
Masters Paper: [Relative Equilibria of Dumbbells Orbiting in a Planar Newtonian Gravitational System](#)
- **Minnesota Teaching License**, Mathematics (grades 5 – 12) June 2015
- **BA in Mathematics Teaching**, Metropolitan State University; St. Paul, MN Spring 2015
Summa Cum Laude. Urban Teaching Program
- **BFA in Music**, University of Minnesota; Morris, MN Spring 1998

Publications

- *Calculating quasinormal modes of Schwarzschild anti-de Sitter black holes using the continued fraction method* (with Green, Daghigh). DOI: [10.1103/PhysRevD.107.024023](https://doi.org/10.1103/PhysRevD.107.024023) January 2023
- *Relative Equilibria for Orbiting Dumbbells in a Planar System* University of Minnesota, Dissertation June 2022
- *Scalar Perturbations of a Single-Horizon Regular Black Hole* (with Green, Daghigh, Kunstatter) November 2020
Physical Review D 102, 104040 (2020). DOI: [10.1103/PhysRevD.102.104040](https://doi.org/10.1103/PhysRevD.102.104040)
- *Significance of Black Hole Quasinormal Modes: A Closer Look* (with Green, Daghigh) May 2020
Physical Review D 101, 104009 (2020). DOI: [10.1103/PhysRevS.101.104009](https://doi.org/10.1103/PhysRevS.101.104009)
- *The Consequence of Using a Quantum Two-State Magnetic Field in a Stern-Gerlach Experiment* August 2016
(with Green, Daghigh, West). Preprint: [arXiv:1608.01638v1](https://arxiv.org/abs/1608.01638v1) (published version acknowledged my contribution)
- Environmental sustainability [Curriculum for College Algebra and Pre-Calculus](#) Summer 2014
Developed through an NSF funded project, *Engaging Mathematics*

Teaching Related Experiences

- MathCEP Assistant Professor (Postdoc), UMTYMP, University of Minnesota; Minneapolis Scheduled 2022-2023
Lecturing four courses. Supervising instructors. Applied Linear Algebra (MATH 4242); Calculus I (MATH 1471); Multivariable Calculus (MATH 2473).
- MathCEP Assistant Professor (Postdoc), UMTYMP, University of Minnesota; Minneapolis 2022-2023
Lectured four courses. Supervised instructors and a TA. Differential equations, logic, proof writing (MATH 1473); linear algebra (MATH 2471); math modeling biological systems (MATH 2241). Led groupwork in a calculus 2 section (MATH 1472), and led an enrichment activity for middle schoolers.
- Lecturer (teacher of record), University of Minnesota; Minneapolis MN Fall 2021
Linear Algebra and Differential Equations, with four sections. Supervised two graduate students as TAs
- TA Instructor, University of Minnesota; Minneapolis MN Fall 2016 – Spring 2021
Calculus I/II, Linear Algebra and Differential Equations
Average student rating over 24 classes: 5.5 out of 6
- Substitute Teacher; Bloomington Public Schools; Bloomington, MN. 7-12th grade math 2015 – 2016
- Student Teacher, Kennedy High School; Bloomington, MN. Algebra 2 and College Algebra January – April, 2015
- Teaching Assistant, Valley View Middle School; Bloomington, MN. 7th grade math January – May, 2014
- Volunteer Teaching Assistant, Washburn High School; Minneapolis, MN September 2011 – December 2013
Geometry and Calculus

Service and Mentor

- Director of IMA-MathCEP Modeling Summer Camp, University of Minnesota July 2023
- Postdoc hiring committee Spring 2023
- Mentored an undergraduate as part of a Directed Reading Program. Text: *Analysis I*, by Terence Tao Fall 2021
- Developed a [Mathematics Comprehension Strategy Log](#) with strategies to narrow the achievement gap Spring 2014
- Volunteer Tutor, Green Central Middle School; Minneapolis, MN February – May 2013
- Participated in MN chapter of the National Association for Multicultural Education's fall conference Fall 2011
- Volunteer Tutor for clients with mental illness working toward their GED; Community Options 2006 – 2014

Seminar and Talks

- Seminar talks at University of St. Thomas, Macalester College, and Metro State University Spring 2023
Talk title: Orbiting Satellites: Achieving Stability
- MAA Spring 2022 Meeting, Metropolitan State University; Saint Paul, MN April 2022
Talk title: *Relative Equilibria of Dumbbells Orbiting in a Planar Newtonian Gravitational System*
- Brazilian Orbital Dynamics Colloquium, Federal University of Pernambuco; Recife, Brazil December 2021
Talk title: *Relative Equilibria of Dumbbells Orbiting in a Planar Newtonian Gravitational System*
Video: youtube.com/watch?t=1498&v=T9LXr5NakYE
- Masters Oral Exam, University of Minnesota; Minneapolis, MN April 2020
Talk title: *Relative Equilibria of Dumbbells Orbiting in a Planar Newtonian Gravitational System*
- Dynamical Systems Seminar, University of Minnesota; Minneapolis, MN April 2020
Talk title: *Relative Equilibria of Dumbbells Orbiting in a Planar Newtonian Gravitational System*
- Joint Mathematics Meetings, Contributed Paper; San Antonio, TX January 2015
Talk title: *Undergraduate Sustainability Experiences in the Mathematics Classroom*

Grants, Honors, and Awards

- Acquired internal funding (\$15,000) at Metro State University, St. Paul for advanced research computer to conduct parallel processing of quasi-normal modes of black holes. June 2023
- Certifications for "Outstanding Teaching and Dedication to Helping Students Learn" 2016 – 2022
Nine recognitions from the University of Minnesota, Center for Educational Innovation
Comment from a recent award: "You were an excellent TA before the [pandemic] transition; you were always enthusiastic and willing to help people out. You did wonders when transitioning to online as you quickly switched your office hours to online as well as our discussion sessions."
- American Mathematical Society travel grant to attend the Joint Mathematics Meetings November 2021
- National Science Foundation summer funding through advisor's research grant 2019 – 2020
- Outstanding Student Award, Metropolitan State University, College of Arts and Sciences Spring 2015
Awarded to only one graduating senior
- Granted funding to attend Minnesota Council of Teachers of Mathematics; Duluth, MN May 2015
- Academic Achievement Scholarship, Metropolitan State University; St. Paul, MN May 2013

Other Experiences/Accomplishments

- Conducted an interview and provided feedback on potential faculty hire November, 2021
University of Minnesota Mathematics Department, Faculty Search Committee
- Mentored math students/Profs with disabilities in use of assistive technology to produce math script 2006-2023
- Participated in GAIN conference "to empower math faculty to support graduate students with respect to issues of discrimination and systemic inequity." Topics included advocacy for *students with disability*. October, 2021
- Served as invited panelist for Women in Mathematics' "Oral Exam Panel" Fall 2020
- Served as peer mentor for incoming math graduate students, University of Minnesota Fall 2018
- Class project. Developed a mathematical model and ran simulations of electoral ranked-choice voting using Mathematica. Gave presentation of my findings Fall 2013
- Invited to, and participated in a Roundtable Discussion with St. Paul Mayor Chris Coleman for the 2013 "State of the City" at Metropolitan State University Spring 2013
- Built web application "RadioChimp." A service to send audio e-mail messages, podcast radio shows, or embed audio messages into webpages 2008 – 2013,
- Built website with MP3 automation for a nonprofit's "Sunday Talks" 2008 – 2012
using Perl, PHP, JavaScript, RSS, HTML