

# MARIYA SAVINOV

mariyasavinov@nyu.edu  
https://cims.nyu.edu/~mas10009/  
Warren Weaver Hall, office 907

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EMPLOYMENT	<b>NSF-Simons National Institute for Theory and Mathematics in Biology</b> <i>NITMB Fellow</i> <span style="float: right;"><i>starting September 2025</i></span> <b>University of Chicago</b> <i>Chicago Fellow, Biological Sciences Division</i> <span style="float: right;"><i>starting September 2025</i></span>
EDUCATION	<b>Courant Institute of Mathematical Sciences, New York University</b> <i>Ph.D. in Mathematics</i> <span style="float: right;"><i>2020 - 2025 (expected)</i></span> <ul style="list-style-type: none"><li>• Advisor: Prof. Alex Mogilner</li><li>• Thesis: Biophysical modeling and simulation of contractile actomyosin dynamics</li></ul> <b>University of Pittsburgh</b> <i>B.Phil. in Mathematics and Physics, with honors</i> <span style="float: right;"><i>2016 - 2020</i></span> <ul style="list-style-type: none"><li>• Advisor: Prof. Bard Ermentrout</li><li>• Honors Thesis: Synchronization and locking in oscillators with flexible periods</li><li>• GPA: 4.0</li></ul>
RESEARCH INTERESTS	mathematical biology, cell biology, mechanics, modeling, numerical simulation, actomyosin, nonlinear phenomena, viscoelasticity
PREPRINTS	5. A model for contractile stress fibers embedded in bulk actomyosin networks M. Savinov, C.S. Peskin, and A. Mogilner, in review at <i>Journal of Mathematical Biology/Bulletin of Mathematical Biology Joint Special Collection "Problems, Progress, and Perspectives in Mathematical and Computational Biology"</i> . Preprint available on <i>arXiv</i> .
PUBLICATIONS	4. Size-dependent transition from steady contraction to waves in actomyosin networks with turnover A. Krishna, M. Savinov, N. Ierushalmi, A. Mogilner, and K. Keren, <i>Nature Physics</i> , Jan 2024, vol. 20, pg. 123–134. doi: 10.1038/s41567-023-02271-5. 3. Friction patterns guide actin network contraction <span style="float: right;"><i>*equally contributing first authors</i></span> A. Colin*, M. Orhant-Prioux*, C. Guérin*, M. Savinov*, I. Scarfone, A. Roux, E.M. De La Cruz, A. Mogilner, M. Théry, and L. Blanchoin, <i>PNAS</i> , Sept 2023, vol. 120, no. 39, p. e2300416120, Sep. 2023, doi: 10.1073/pnas.2300416120. 2. Crawling, waving, inch worming, dilating, and pivoting mechanics of migrating cells: Lessons from Ken Jacobson A. Mogilner, M. Savinov, <i>Biophysical J.</i> , Mar 2023, doi: 10.1016/j.bpj.2023.03.023 1. Synchronization and locking in oscillators with flexible periods M. Savinov, D. Swigon, and B. Ermentrout, <i>Chaos</i> , vol. 31, no. 3, p. 033143, Mar. 2021, doi: 10.1063/5.0021836.
AWARDS AND HONORS	<b>NSF Mathematical Sciences Postdoctoral Research Fellowship</b> <span style="float: right;"><i>2025</i></span> <i>Awarded support: \$190,000, declined</i> Project Title: “Mechanosensitive assembly of yeast actin cables” <b>SIAM Travel Award</b> , Society for Industrial and Applied Mathematics <span style="float: right;"><i>2024</i></span> <i>In support of attendance at SIAM Life Sciences 2024, \$650</i>

AWARDS AND HONORS (CONT.)	<b>BPS Travel Award</b> , Biophysical Society	2024
	<i>In support of attendance at BPS Annual Meeting 2024, \$200</i>	
	<b>Paul Garabedian Fellowship</b> , NYU Courant	2023
	<i>Awarded to an outstanding PhD student</i>	
	<b>ASCB Travel Grant</b> , American Society for Cell Biology	2023
	<i>In support of attendance at Cell Bio 2023, \$500</i>	
	<b>Martin &amp; Sarah Leibowitz Graduate Prize for Quantitative Biology</b>	2023
	<i>NYU Courant</i>	
	<i>Awarded for academic excellence within the field of Quantitative Biology, \$2500</i>	
	<b>SIAM Travel Award</b> , Society for Industrial and Applied Mathematics	2023
	<i>In support of attendance at SIAM Dynamical Systems 2023, \$650</i>	
	<b>Bella Manel Prize</b> , NYU Courant	2022
	<i>Awarded for excellence and promise in mathematics on the graduate level, \$500</i>	
	<b>Dean's Doctoral Fellowship</b> , NYU	2020-2025
<b>NSF Graduate Research Fellowship</b>	2020-2025	
<b>Goldwater Scholarship</b>	2019	
<b>DAAD Research Internships in Science and Engineering Scholarship</b>	2019	
<i>Advisors: Prof. Pawel Romanczuk and Dr. Winnie Poel (Humboldt University of Berlin)</i>		
<b>Sigma Pi Sigma (<math>\Sigma\Pi\Sigma</math>) Induction</b> , American Institute of Physics	2019	
<b>Brackenridge Research Fellowship</b> , PITT Honors College	2018	
<b>Koehler Academic Achievement Award</b> , PITT Dept. of Physics and Astronomy	2018	
<b>NSF-REU in Extremal Graph Theory and Dynamical Systems</b>	2017	
<i>Advisor: Prof. Elizabeth Cherry (Rochester Institute of Technology)</i>		
PRESENTATIONS	<b>ASCB/EMBO 2024: Cell Bio   Subgroup Talk</b>	Dec 2024
	<ul style="list-style-type: none"> <li>• <i>Tumor cluster coattraction is driven by the ECM</i></li> <li>• Session: Theoretical Mechanobiology from Single Cell to Multicellular Level</li> </ul>	
	<b>UPenn Center for Mathematical Biology: MathBio Seminar   *Invited Talk</b>	Oct 2024
	<ul style="list-style-type: none"> <li>• <i>Contractile cytoskeletal networks: the guiding role of friction</i></li> </ul>	
	<b>ICERM: QCAM   Contributed Talk</b>	June 2024
	<ul style="list-style-type: none"> <li>• <i>Modeling and simulation of the cytoskeleton: the role of friction</i></li> <li>• Workshop: Queer in Computational and Applied Mathematics</li> </ul>	
	<b>SIAM Life Sciences 2024   *Invited Minisymposium Presentation</b>	June 2024
	<ul style="list-style-type: none"> <li>• <i>Modeling the mechanics of actomyosin structures</i></li> <li>• Session: Data-driven Modeling of Spatial Subcellular Processes</li> </ul>	
<b>PITT AWM Student Seminar   *Invited Talk</b>	March 2024	
<ul style="list-style-type: none"> <li>• <i>Modeling the cytoskeleton: how friction can guide its dynamics</i></li> <li>• Talk recording can be found here</li> </ul>		
<b>Biophysical Society Annual Meeting   Flash Talk (2598) and Poster (P3023)</b>	Feb 2024	
<ul style="list-style-type: none"> <li>• <i>Friction, not myosin, directs actin network contraction</i></li> </ul>		

PRESENTATIONS (CONT.)	<b>ASCB/EMBO 2023: Cell Bio   Subgroup Talk</b>	Dec 2023
	<ul style="list-style-type: none"> <li>• <i>Friction patterns guide actomyosin network contraction on micropatterned surfaces</i></li> <li>• Session: <b>Building the Cell</b></li> </ul>	
	<b>Flatiron CCB Dynamics in Cells and Embryos Conference   Poster</b>	Oct 2023
	<ul style="list-style-type: none"> <li>• <i>Friction patterns guide actin network contraction</i></li> </ul>	
	<b>SIAM Dynamical Systems 2023   *Invited Minisymposium Presentation</b>	May 2023
	<ul style="list-style-type: none"> <li>• <i>Modeling Contractility Patterns of Actomyosin Networks on Micropatterned Surfaces</i></li> </ul>	
	<b>ASCB/EMBO 2022: Cell Bio   Poster (P2438)</b>	Dec 2022
	<ul style="list-style-type: none"> <li>• <i>Contractility patterns in actomyosin networks with turnover are controlled by system geometry</i></li> </ul>	
	<b>Flatiron CCB Turing Symposium   Poster</b>	Oct 2022
	<ul style="list-style-type: none"> <li>• <i>Modeling the Steady Flow-Wave Transition in Contractile Actomyosin Networks</i></li> </ul>	
<b>SIAM Life Sciences 2022   Poster</b>	July 2022	
<ul style="list-style-type: none"> <li>• <i>Modeling the Steady Flow-Wave Transition in Contractile Actomyosin Networks</i></li> </ul>		
<b>NIMBioS Undergraduate Research Conference   Oral Presentation</b>	Oct 2018	
<ul style="list-style-type: none"> <li>• <i>Entrainment of Forced Oscillators with Flexible Periods</i></li> </ul>		
<b>SIAM Life Sciences 2018   Poster</b>	Aug 2018	
<ul style="list-style-type: none"> <li>• <i>Controlling Period-2 Electrical Activity in a Cardiac Cell Model</i></li> </ul>		
<b>SIAM Annual Meeting 2018   Contributed Lecture</b>	July 2018	
<ul style="list-style-type: none"> <li>• <i>Controlling Period-2 Electrical Activity in a Cardiac Cell Model</i></li> </ul>		
PROFESSIONAL, OUTREACH, AND SERVICE ACTIVITIES	<b>Modeling and Simulation Group Meeting   Seminar Organizer</b>	2023-2024 AY
	<ul style="list-style-type: none"> <li>• Co-organized the schedule and moderated sessions for this seminar in applied mathematics for graduate students, postdocs, and faculty at the Courant Institute.</li> <li>• General participation since 2020, contributing research talks, figure-making tutorials, and discussions of open problems and research challenges.</li> </ul>	
	<b>cSplash 2024   Lecturer</b>	April 28, 2024
	<ul style="list-style-type: none"> <li>• NYU Courant's annual math-outreach lecture series for high-schoolers.</li> <li>• Contributed lecture "A crash course in modeling population dynamics" (40 minutes), covering classic population biology models for single species growth and two-species competition with an emphasis on assumptions and their impacts on predictions.</li> </ul>	
	<b>Peer reviewer   <i>Biophysical J.</i></b>	2021 - <i>present</i>
	<b>Courant PhD Student Survey   Lead student organizer</b>	fall 2022, 2023
	<ul style="list-style-type: none"> <li>• Facilitated the design and analysis of an internal PhD student survey, with the intention to identify Courant student needs and concerns to department leadership. Roughly two-thirds of PhD students responded both years.</li> </ul>	
	<b>Courant DEI Reading Group   Organizer</b>	2021-2024
<ul style="list-style-type: none"> <li>• Organizing and leading discussions on Diversity, Equity, and Inclusion issues in the context of Mathematics education and academia.</li> </ul>		
<b>TESSA Talks   Founder and lead student organizer</b>	2018-2020	
<ul style="list-style-type: none"> <li>• Technology, Education, Science, Society, and Art discussion forum at the UPITT Honors College.</li> </ul>		

TEACHING  
AND  
MENTORING

**Co-advising MS theses in mathematics**

2024-2025 AY

*Masters students: Rongjie Zhu and Tongtong Liu*

- Co-advising projects on mathematical modeling and simulation of (1) cell motility in *Ciona* and (2) *in vitro* actomyosin dynamics, with Prof. Alex Mogilner.

**Teaching assistant for MATH-UA 258: Honors Numerical Analysis**

spring 2025

*Course instructor: Prof. Alan Kaptanoglu*

- Designed weekly recitation section worksheets and held weekly office hours. Course covers the analysis of numerical algorithms ubiquitously used to solve problems throughout mathematics, physics, engineering, finance, and the life sciences.

**Teaching assistant for MATH-UA 251: Mathematical Modeling**

2023-2024 AY

*Course instructor: Prof. Aaditya Rangan (fall 2023), Prof. Alex Mogilner (spring 2024)*

- Designed recitation section materials and wrote weekly quizzes, with weekly office hours. Courses focused on the formulation and analysis of mathematical models for problems in biology, physics, economics, etc.

**Course assistant for MATH-GA 2020: Graduate Numerical Methods II**

spring 2023

*Course instructor: Prof. Aleksandar Donev*

- Ran weekly office hours and graded computational assignments, as well as assisted in creation of an example suite of ODE solvers with object-oriented design, responsible for designing the MATLAB codes (available on github.)
- On 02/28, taught 1h50min course lecture on “Absolute Stability and Stiffness”

**Substitute Lecturer for MATH-UA 252: Numerical Analysis**

spring 2023

*Course instructor: Dr. Samuel Potter*

- On 4/18 and 4/20, taught two 1h15min lectures introducing numerical methods for ODEs at the undergraduate level. Lecture notes can be found on my webpage.

SKILLS

**Computing – advanced:** MATLAB, Python, LaTeX

**Computing – basic:** C, CUDA, MPI

**Russian,** heritage speaker