

Youngmin PARK

Department of Mathematics
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EMPLOYMENT

AUG. 2022 – PRESENT	Assistant Professor University of Florida
SEP. 2021 – SEP. 2022	PIMS Postdoctoral Fellow University of Manitoba Advisor: Stephanie Portet
JUN. 2019 – JUL. 2021	Postdoctoral Fellow Brandeis University Advisor: Thomas Fai
MAY 2018 – MAY 2019	Postdoctoral Fellow University of Pennsylvania Advisor: Maria N. Geffen

EDUCATION

AUG. 2013 – APR. 2018	PhD Mathematics, University of Pittsburgh Thesis: Dimension Reduction of Neural Models Across Multiple Spatio-temporal Scales Advisor: G. Bard Ermentrout
AUG. 2012 – AUG. 2013	MS Applied Math Case Western , Cleveland, OH Thesis: Infinitesimal Phase Response Curves for Piecewise Smooth Dynamical Systems Advisor: Peter J. Thomas
AUG. 2008 – AUG. 2013	BS Applied Math Case Western , Cleveland, OH

Additional Training

SEP. 2016	Max Planck Institute Göttingen Advanced Computational Neuroscience
AUG. 2015	Woods Hole MBL Methods in Computational Neuroscience
JUN. 2010	Mathematical Biosciences Institute OSU Summer Program

PEER-REVIEWED PUBLICATIONS

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1. **Park, Y.**, “ $n:m$ Phase-Locking of Coupled Oscillators with Nonlinearities in Coupling Strength and Heterogeneity.” (2026, in press).
 2. **Park, Y.**, Wilson, D., “ N -Body Interactions of Heterogeneous Strongly Coupled Oscillators.” SIADS 23.2 (2024).
 3. **Park, Y.**, Leduc, C., Etienne-Manneville, S., and Portet, S. Models of Vimentin Organization Under Actin-Driven Transport. PRE 107.5 (2023).
 4. **Park, Y.**, Fai, T.G., “Coarse-grained Stochastic Model of Myosin-Driven Vesicles into Dendritic Spines.” SIAP 82.3 (2022).
 5. Fai, T.G., **Park, Y.** “Global asymptotic stability of an active disassembly model of flagellar length control.” Journal of Mathematical Biology 84.8 (2022).
 6. **Park, Y.**, Wilson, D. “High-Order Accuracy Computation of Coupling Functions for Strongly Coupled Oscillators.” SIADS 20.3 (2021).
 7. **Park, Y.**, Fai, T.G. “The Dynamics of Vesicles Driven Into Closed Constrictions by Molecular Motors.” Bulletin of Mathematical Biology. 82.141 (2020).
 8. **Park, Y.**, Geffen, M.N. “A Circuit Model of Auditory Cortex.” PLOS Computational Biology. 17.6 (2020).
 9. Ermentrout, G.B., **Park, Y.**, Wilson, D. “Recent advances in coupled oscillator theory.” Philosophical Transactions A. 377 (2019).
 10. **Park, Y.**, Ermentrout, G.B. “A Multiple Timescales Approach to Bridging Spiking- and Population-level Dynamics.” Chaos. 28.8 (2018).
 11. **Park, Y.**, Ermentrout, G.B. “Scalar Reduction of a Neural Field Model with Spike Frequency Adaptation.” SIADS 17.1 (2018).
 12. **Park, Y.**, Shaw, K.M. Chiel, H.J. Thomas, P.J. “The Infinitesimal Phase Response Curve of Oscillators in Piecewise Smooth Dynamical Systems.” EJAM 19.5 (2018).
 13. **Park, Y.**, Ermentrout, G.B. “Weakly Coupled Oscillators in a Slowly Varying World.” Springer Journal of Computational Neuroscience 40.3 (2016).
 14. Shaw, K.M., **Park, Y-M.**, Chiel, H.J., Thomas, P.J. “Phase Resetting in an Asymptotically Phaseless System:

On the Phase Response of Limit Cycles Verging on a Heteroclinic Orbit.” SIADS 11.1 (2012).

In Preparation

1. **Park, Y.**, Fai, T.G. “Mean First Passage Time of Vesicle Translocation in Dendritic Spines.” (2026, submitted).
2. Wang, J., **Park, Y.**, Morsky, B., “Synchronized Disease and Behavioral Dynamics in Weakly Coupled Populations” (2026, submitted).

BOOK CHAPTERS AND UNDERGRADUATE JOURNALS

1. Bailey-Feliciano, B., VanVeckhoven, G.W., Pan, J., **Park, Y.** “A Mathematical Model of Hematopoiesis in Systemic Infection.” UF Journal for Undergraduate Research (2026).
2. Close, B., Rhodes, J., Silverman, C., **Park, Y.** “Using Differential Equations to Model Heavy Metal Bioaccumulation as part of SCUDEM IX Challenge.” UF Journal of Undergraduate Research, 27 (2025).
3. **Park, Y.**, Heitmann, S., Ermentrout, G.B. “The Utility of Phase Models in Studying Neural Synchronization.” Book chapter in “Computational Models of Brain and Behavior”. Wiley-Blackwell 493–505 (2017).

MENTORSHIP

2025–	Teresa Castano PhD student
2025–	Vincent Holmlund PhD student
2025–	Kaylah Adams CLAS USP recipient
Nov. 2023 – MAY 2025	Roberto Giuffredi Undergraduate Honor’s Thesis and CLAS USP recipient

TEACHING

School	Type	Class	Term(s)
U. Florida	Lecture	Linear Algebra	Fall 2022
		Lin. Alg. for Data Sci.	2023–2025
		Appl. Koopman Operators	Fall 2023
		Modeling in Mathematical Biology	Spring 2024
U. Manitoba	Lecture	Ordinary Differential Equations	Fall 2021
	Lecture	Partial Differential Equations	Fall 2021
Marine Biol. Lab.	Assistant	Methods in Comp. Neuroscience	Summer 2021
Brandeis	Lecture	Linear Algebra	Spring 2020
		Calculus 3	Spring 2021
U. Pitt.	Lecture	Differential Equations (3 sections)	Summers, 2014–2017
		Linear Algebra	Summer 2015
		Discrete Math	Spring 2015
	Recitation	Computational Neuroscience	Summers, 2014–2017
		Business Calculus (6 sections)	Fall/Spring 2013/16
		Calculus 1, 2, 3 (6 sections)	Fall/Spring 2014–2016
	Grading	Differential Equations (10 sections)	Fall/Spring 2013–2017
		Complex Variables and Applications	Spring 2017
		Linear Algebra (2 sections)	Spring 2016
Oberlin	Assistant	Computational Neuroscience	Winter 2013
Case Western	Assistant	Calculus 3	Spring 2012

HONORS, AWARDS, & FUNDING

2025	Mentor for Finalist team in MCM/ICM international modeling competition that won the INFORMS Award.
2025–2028	NSF DMS 2512988 Mathematical Biology for \$200,000
SEP. 2021–AUG. 2023	PIMS Postdoctoral Fellowship
2021	Society for Mathematical Biology poster prize
2021	SIAM Early Career Travel Award
SEP. 2017–MAY 2018	Andrew Mellon Predoctoral Fellowship
2017	SIAM Student Travel Award
2016	Elizabeth Baranger Teaching Award (nominated)
2012	SPUR (Summer Program for Undergraduate Research)

ORAL PRESENTATIONS

- “The Phase Reduction of Non-Weakly Coupled Heterogeneous Oscillators”
 - Feb. 2025 Mathematical Biology Seminar, Florida State University, Tallahassee, FL

- Apr. 2025 Data Science Seminar, Purdue University Fort Wayne (remote).
- “*N*-Body Interactions of Heterogenous Strongly Coupled Oscillators”
 - Jul. 2024 SIAM AN, Spokane, WA
 - Mar. 2023 APS March Meeting, Las Vegas, NV
 - Mar. 2023 BYU Numerical Analysis Seminar, Provo, UT
- “Models of Vimentin Organization Under Actin-Driven Transport”
 - Sep. 2022 U. Florida Biomathematics Seminar, Gainesville, FL
 - May 2022 Canadian Mathematical Society Summer Meeting, St. Johns, Newfoundland
- “High-Order Accuracy Computation of Coupling Functions for Strongly Coupled Oscillators”
 - May 2021 SIAM Dynamical Systems (virtual)
- “Coarse-grained Stochastic Model of Myosin-Driven Vesicles into Dendritic Spines”
 - Jul. 2024 SIAM Life Sciences, Portland, OR
 - Mar. 2021 SIAM CSE (virtual)
- “Scalar Reduction of a Neural Field Model with Spike Frequency Adaptation”
 - Mar. 2020 Boston University Dynamics Seminar (Cancelled due to COVID-19)
 - Jul. 2019 Society for Mathematical Biology, University of Montreal
 - May 2019 SIAM Dynamical Systems, Snowbird, Utah
 - Mar. 2016/17 U. Pitt. Mathematical Biology Seminar
- “A Multiple Timescales Approach to Bridging Spiking- and Population-level Dynamics”
 - Mar. 2018 U. Pitt. Mathematical Biology Seminar
- “The Dynamics of Vesicles Driven through Closed Constrictions by Molecular Motors”
 - Aug. 2020 Society for Mathematical Biology (virtual)
 - Jun. 2020 SIAM Life Sciences (virtual)
 - Jun. 2020 Brandeis Mathematical Biology Seminar, Waltham, MA
 - Jan. 2020 Aspen Center for Physics, Aspen, CO
 - Nov. 2019 APS Fluids, Seattle, WA
 - Aug. 2019 Society for Mathematical Biology (virtual)
- “Weakly Coupled Oscillators in a Slowly Varying World”
 - Sep. 2018 Computational Neuroscience Initiative Seminar, Philadelphia, PA
 - May 2015/17 SIAM Dynamical Systems, Snowbird, Utah
 - Mar. 2015 U. Pitt. Mathematical Biology Seminar
- “The Infinitesimal Phase Response Curve of Oscillators in Piecewise Smooth Dynamical Systems”
 - Jul. 2017 SIAM Annual Meeting, Pittsburgh, PA

SERVICE

FALL 2024–PRES.	Math Department Newsletter Editor (Little by Little)
FALL 2024–PRES.	Faculty advisor, undergraduate modeling contests (SCUEM & MCM/ICM)
MAR. 2023–APR. 2024	Volunteer for UF Math Circle
JUL. 2021	Judge for poster presentations at SMB 2021
JUN. 2019–JUL. 2020	Organizer of the Brandeis Math Bio Seminar
JUL. 2019–PRES.	Volunteer advisory member of the SMB Neuroscience Subgroup
JUL. 2019	Judge for poster presentations at SMB 2019 Montreal
APR. 2019	Guest lecturer, Science Outreach, Moder Patshala & Free Library of Philadelphia
JUL. 2017	Volunteer kit-stuffing at the SIAM Annual Meeting
MAR. 2017	Volunteer lifeline at the Pitt Integration Bee

CONFERENCE ATTENDANCE AND POSTERS

JUN. 2021	Poster, Society for Mathematical Biology, University of Montreal
JUN. 2019	Attendance, 79th New England Complex Fluids, Boston University
NOV. 2019	Attendance, CMSA Workshop, Harvard University
MAR. 2019	Poster, MINS Symposium Philadelphia, Pennsylvania
SEP. 2018	Poster, Auditory SPLASH Conference Philadelphia, Pennsylvania
MAY. 2015	Poster, SIAM: Dynamical Systems Snowbird, Utah
MAY. 2011	Attendance, SIAM: Dynamical Systems, Snowbird, Utah
AUG. 2010	Oral presentation, Mathematical Association of America MathFest, Pittsburgh, PA
JUL. 2010	Attendance, SIAM: Life Sciences, Pittsburgh, PA