Brennan W. Sprinkle

Contact Information	Warren Weaver Hall, 1010 Courant Institute New York University New York, NY 10012 USA	Mobile: (303) 525-5546 E-mail: bs162@cims.nyu.edu WWW: www.brennansprinkle.com	
Research Interests	Fiber Suspensions, Colloidal Suspensions, Soft Matter, Fluctuating Hydrodynamics, Numerical Methods and Simulation, Stochastic Differential Equations, Immersed Boundary Methods, Com- putational Fluid Dynamics		
CURRENT Position	Courant Instructor (Assistant Professor) Courant Institute of Mathematical Sciences (Since Sept. 2019)		
	Postdoctoral Researcher between Sept. 2018 and Sept. 2019		
Education	Doctor of Philosophy Northwestern University, Engineering Sciences and Applied Math, 2018		
	Advisors: Neelesh Patankar, Aleksandar Donev Dissertation Topic: "Development and Use of High Performance Numerical Methods to Study Fluid Structure Interaction Phenomena at Two Different Scales"		
	Bachelor and Master of Science Colorado School of Mines, Applied Math and Statistics, 2013		
	Advisor: Mahadevan Ganes Dissertation Topic: "Surfac vesicle flows in three dimens	n e integral equation based derivation and algorithm for simulating ions"	
PUBLICATIONS	 B. Sprinkle, S. Wilken, S. Karapetyan, M. Tanaka, Z. Chen, J. R. Cruise, B. Delmotte, M. M. Driscoll, P. Chaikin, and A. Donev, "Sedimentation of a colloidal monolayer down an inclined plane," <i>Phys. Rev. Fluids</i>, vol. 6, p. 034202, 2021 		
	 B. Sprinkle, E. B. van der Wee, Y. Luo, M. Driscoll, and A. Donev, "Driven dynamics in dense suspensions of microrollers," <i>Soft Matter</i>, vol. 16, pp. 7982 – 8001, 2020 		
	 T. Yang, B. Sprinkle, Y. Guo, J. Qian, D. Hua, A. Donev, D. W. M. Marr, and N. Wu, "Reconfigurable microbots folded from simple colloidal chains," <i>Proceedings of the National</i> <i>Academy of Sciences</i>, 2020 		
	 B. Sprinkle, A. Donev, A. P. S. Bhalla, and N. Patankar, "Brownian dynamics of fully confined suspensions of rigid particles without Green's functions," <i>The Journal of Chemical Physics</i>, vol. 150, no. 16, p. 164116, 2019 		
	 5. B. Sprinkle, F. B. Usabiaga, N. A. Patankar, and A. Donev, "Large scale Brownian dynamics of confined suspensions of rigid particles," <i>The Journal of Chemical Physics</i>, vol. 147, no. 24, p. 244103, 2017. Software available at: https://github.com/stochasticHydroTools/RigidMultiblobsWall 		
	 B. Sprinkle, R. Bale, A. P. S. Bhalla, M. A. MacIver, and N. A. Patankar, "Hydrodynamic optimality of balistiform and gymnotiform locomotion," <i>European Journal of Computationa</i> <i>Mechanics</i>, vol. 26, no. 1-2, pp. 31–43, 2017 		
Grants and Funding	NSF-DMS-2052515, Computational modeling of cytoskeleton-cytoplasm mechanics at the mesoscale (2021-2024) CO-PI with Aleksandar Donev and Alexander Mogilner, \$300,000		
	James Farley Scholarship, Northwestern University, first	2013 year graduate student scholarship	

E-Days Scholarship, 2007–2011 Colorado School of Mines, full four year scholarship

SERVICE Journal Referee

Physical Review Fluids, Journal of Computational Physics

Outreach

AMSURE (Summer REU) Co-Organizer Courant Institute, Summer 2021

NYU 'Proud to Be First' Mentor for first gen. students NYU, 2021

Conference and Seminar Organization

Seminar Co-Organizer, "Modeling and Simulation Group Seminar" Courant Institute, 2020–Present

Seminar Co-Organizer, "Applied Math / Applied Math Lab Seminar" Courant Institute, 2019–2020

Minisymposium Co-Organizer, "Recent Developments in Immersed Boundary Methods" WONAPDE at Universidad de Concepción in Concepción, Chile, January 2019

Seminar Organizer, "Graduate Student Seminar" Northwestern University, 2015–2018

Mentoring

Bowen Zhu, Independent Study, Spring 2020–Present Project: "MCMC sampling of polymer chains and random filaments"

Johanna McCombs, AMSURE (REU), Summer 2021 Co-Advised with Sophie Marbach, Project: "Particle Fluctuations in Ion Channels"

Alexander Lawson, MRSEC REU, Summer 2019 Project: "Brownian Dynamics of Magnetically Driven Chains"

Mansur Shakipov, REU, Summer 2019 Project: "OMP Parallel Solver for a 2D Non-Local PDE Model of Colloidal Sedimentation"

Drew Kersnar, REU, Summer 2018 Project: "Development of a scrutable, high performance fluid structure interaction code." Received a \$3500 undergraduate research grant (URAP) for this research.

Nichakarn "Pare" Laprungsirat, Masters Research Course, Summer 2016 Project: "Simulations of a Simplified Model for 3D Gymnotiform Swimmers"

OPEN SOURCE Co-Dev

Co-Developer/Maintainer

SOFTWARE StochasticHydroTools

Fast, straightforward simulation tools for colloidal suspensions. https://github.com/stochasticHydroTools/RigidMultiblobsWall

Contributor

IBAMR

An adaptive and distributed-memory parallel implementation of the immersed boundary (IB) method. https://github.com/IBAMR/IBAMR

Presentations Inv

Invited Talks

- 1. "Towards a Continuum Method for Fluctuating Fiber Suspensions" Fluid Mechanics and Waves Seminar, NJIT, November 2021.
- "Brownian Dynamics Simulations for Flexible Fibers" Modeling, Computation, Nonlinerarity, Randomness and Waves Seminar, University of Arizona, January 2021.

Conferences and Seminars

1.	"Colloidal Sedimentation Down an Inclined H	Plane"
	MRSEC Seminar, NYU Physics, November 2	2020.

- 2. "Hydrodynamics of Magnetic Chains, and Flexible Fibers with a Twist" Modeling and Simulation Group Seminar, Courant Institute, April 2020.
- "Lubrication Corrections for Brownian Suspensions Above a Wall" APS DFD: Seattle, WA, November 2019.
- "Brownian HydroDynamics of Confined Colloidal Suspensions" Modeling and Simulation Group Seminar, Courant Institute, February 2019.
- 5. "Rigid Particle Brownian Dynamics without Green's Functions" SIAM CSE: Spokane, WA, February 2019.
- "Immersed boundary methods for rigid-particle suspensions" WONAPDE, Universidad de Concepción, Concepción, Chile, January 2019.
- "Large Scale Brownian Dynamics of Confined Suspensions of Rigid Particles" SIAM AN: Portland, OR, July 2018.
- "Brownian Suspensions of Particles with Arbitrary Shape in Totally Confined Domains" APS DFD: Denver, CO, November 2017.
- "A Rigid Multiblob Algorithm for Confined Brownian Suspensions" SIAM CSE: Atlanta, GA, February 2017.
- 10. "A Second Order Temporal Integrator for Brownian Dynamics of Rigid Bodies" APS DFD: Portland, OR, November 2016.
- "Biofluiddynamics of balistiform and gymnotiform locomotion: Revisited" APS DFD: Boston, MA, November 2015.

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