Sameer Iyer

Contact

Department of Mathematics
University of California, Davis
Davis, CA 95616
Email: samiyer@ucdavis.edu
Citizenship: USA

Appointments

UC Davis, Department of Mathematics — July 2021 -
Associate Professor (July 2025 - current)
Assistant Professor (July 2021-July 2025)

Princeton University, Department of Mathematics — September 2018 - June 2021
NSF Postdoctoral Fellow

Short Term Appointments

Stanford University, Department of Mathematics — April 2023-June 2023
Visiting Assistant Professor

Brown University, Division of Applied Mathematics — June 1 - June 30, 2018
Postdoctoral Research Associate

Education

Brown University, Ph.D. in Applied Mathematics (Ph.D. Advisor: Yan Guo) — 2013 - 2018
Brown University, Sc.M in Applied Mathematics, — 2018
Brown University, Sc.B in Applied Mathematics, *magna cum laude* — 2012

Awards & Honors

2025 PMJ Excellent Paper Award — 2025
UC Davis Hellman Fellowship — 2023-2024
Outstanding Dissertation Award in the Physical Sciences (Joukowsky Family Foundation),
Dunmi-Ji Award in Applied Mathematics for graduating Ph.D.'s.
Rohn-Truell Prize in Applied Mathematics (undergraduate award shared with Nadejda Drenska)
Phi Beta Kappa (undergraduate)

Funding & Grants

NSF CAREER Grant (DMS 2442781) — 2025-2030
NSF Standard Grant (DMS 2306528) — 2023-2026
NSF Mathematical Sciences Postdoctoral Research Fellowship (DMS 1802940) — 2018 - 2021

Research Interests

Partial Differential Equations, Fluid Mechanics

Selected Publications

1. S. Iyer, N. Masmoudi
   Reversal in the Stationary Prandtl Equations
   Publ. Math. IHES (accepted 10.2026)
   arXiv: 2203.02845

2. S. Iyer, N. Masmoudi
   Global Inviscid Limit of 2D, Stationary Navier-Stokes and Stability of Prandtl Expansions
   Forum of Math. Pi (accepted 2026)
   arXiv: 2008.12347

3. Y. Guo, S. Iyer
   Validity of Steady Prandtl Layer Expansions
   Comm. Pure Appl. Math. (2023)
   DOI: 10.1002/cpa.22109 arXiv: 1805.05891

Publications & Preprints

31. S. He, S. Iyer, W. Zhao
Nonlinear Inviscid Damping of Couette Flow with Vorticity Perturbations Supported up to the Boundary
preprint October 2026, 72 pages
arXiv: 2610.29975

30. K.G. Duong, T-E. Ghoul, S. Iyer, Y. Maekawa
Boundary Layer Separation Beyond the Square-Root Law
preprint October 2026, 101 pages
arXiv: 2610.01689

29. J. Bedrossian, P. Flynn, S. Iyer
Linear decay of the beta-plane equation near Couette flow on the plane
preprint November 2025, 38 pages
arXiv: 2511.00667

28. J. Bedrossian, S. He, S. Iyer, L. Li, F. Wang
Stability threshold of close-to-Couette shear flows with no-slip boundary conditions in 2D
Math. Ann. (accepted 9.2026)
arXiv: 2510.16378

27. S. Iyer
Recent Progress in Stationary Boundary Layers
EMS Surv. Math. Sci. (2026), 26 pages

26. J. Bedrossian, S. He, S. Iyer, F. Wang
Uniform Inviscid Damping and Inviscid Limit of the 2D Navier-Stokes Equations with Navier Boundary Conditions
preprint May 2024, 157 pages
arXiv: 2405.19249

25. J. Bedrossian, S. He, S. Iyer, F. Wang
Pseudo-Gevrey Smoothing for the Passive Scalar Equations near Couette
J. Funct. Anal. (2025), 130 pages
arXiv: 2405.19233

24. S. Iyer, Y. Maekawa
Local Rigidity of the Couette Flow for the Stationary Triple-Deck Equations
Anal. PDE (2025), 24 pages
arXiv: 2405.10532

23. S. Iyer
Stability of the Favorable Falkner-Skan Profiles for the Stationary Prandtl Equations
Adv. Math. (2025), 59 pages
arXiv: 2403.07791

22. J. Bedrossian, S. He, S. Iyer, F. Wang
Stability threshold of nearly-Couette shear flows with Navier boundary conditions in 2D
Comm. Math. Phys. (2024)
arXiv: 2311.00141

21. T.D. Drivas, S. Iyer, T.T. Nguyen
The Feynman-Lagerstrom criterion for boundary layers
Arch. Rational Mech. Anal. (2024)
DOI: 10.1007/s00205-024-01991-z, arXiv: 2308.15447

20. A.D. Ionescu, S. Iyer, H. Jia
On the Stability of Shear Flows in Bounded Channels, II: Non-monotonic Shear Flows
Vietnam J. Math. (2024)
DOI: 10.1007/s10013-023-00661-z, arXiv: 2301.00288

19. S. Iyer, N. Masmoudi
Higher regularity theory for a mixed-type parabolic equation

preprint December 2022, 36 pages
arXiv: 2212.08735

18. D. Gerard-Varet, S. Iyer, Y. Maekawa
Improved well-posedness for the Triple-Deck and related models via concavity
J. Math. Fluid. Mech. (2023)
DOI: 10.1007/s00021-023-00809-4 arXiv: 2205.15829

17. Y. Guo, S. Iyer
Validity of Steady Prandtl Layer Expansions
Comm. Pure Appl. Math. (2023)
DOI: 10.1002/cpa.22109 arXiv: 1805.05891

16. S. Iyer, N. Masmoudi
Reversal in the Stationary Prandtl Equations
Publ. Math. IHES (accepted 10.2026)
arXiv: 2203.02845

15. T. Buckmaster, S. Iyer
Formation of Unstable Shocks for 2D Isentropic Compressible Euler
Comm. Math. Phys. 389, (2022) 197-271.
DOI: 10.1007/s00220-021-04271-z arXiv: 2007.15519

14. S. Iyer, N. Masmoudi
Boundary Layer Expansions for 2D Navier-Stokes Flows
Ars Inveniendi Analytica (2021)
DOI: 10.15781/64dc-7z92, arXiv: 2103.09170

13. S. Iyer, C. Zhou
Corrigendum to "Stationary inviscid limit to shear flows"
J. Differ. Equ. 289 (2021) 279-288
DOI: 10.1016/j.jde.2021.04.015

12. S. Iyer, N. Masmoudi
Global Inviscid Limit of 2D, Stationary Navier-Stokes and Stability of Prandtl Expansions
Forum of Math. Pi (accepted 2026)
arXiv: 2008.12347

11. Y. Guo, S. Iyer
Regularity and Expansion for Steady Prandtl Equations
Comm. Math. Phys. 382, (2021), 1403-1447.
DOI: 10.1007/s00220-021-03964-9 arXiv: 1903.08086

10. S. Iyer, V. Vicol
Real Analytic Local Wellposedness for the Triple Deck
Comm. Pure Appl. Math. 74 (2021), no.8, 1641-1684.
DOI: 10.1002/cpa.21894 arXiv: 1905.07640

9. S. Iyer
On Global-in-x Stability of Blasius Profiles
Arch. Rational Mech. Anal. 237 (2020), 951-998.
DOI: 10.1007/s00205-020-01523-5 arXiv: 1812.03906

8. Y. Guo, S. Iyer
Steady Prandtl Layer Expansions with External Forcing
Quart. Appl. Math. (accepted January 2023)
DOI: 10.1090/qam/1655 arXiv: 1810.06662

7. S. Iyer, C. Zhou
Steady Inviscid Limit to Shear Flows
J. Differ. Equ. 267 (2019), no. 12, 7135-7153.
DOI: 10.1016/j.jde.2019.07.017 arXiv: 1711.05664

6. S. Iyer
Steady Prandtl Layers over a Moving Boundary: Non-Shear Euler flows
SIAM J. Math. Anal. 51 (2019) no. 3 1657-1695.

DOI: 10.1137/18M1207351 arXiv: 1705.05936

5. S. Iyer, B. Sandstede
Mixing in Reaction Diffusion Systems: Large Phase Offsets
Arch. Rational Mech. Anal. 233 (2019) no.1, 323-384.
DOI: 10.1007/s00205-019-01358-9 arXiv: 1610.06527

4. S. Iyer
Global Steady Prandtl Expansion Over a Moving Boundary, III
Peking Math. J. 3 (2020) 47-102.
DOI: 10.1007/s42543-019-00015-0 arXiv: 1609.05397

3. S. Iyer
Global Steady Prandtl Expansion Over a Moving Boundary, II
Peking Math. J. 2 (2019) 354-437.
DOI: 10.1007/s42543-019-00014-1 arXiv: 1609.05397

2. S. Iyer
Global Steady Prandtl Expansion Over a Moving Boundary, I
Peking Math. J. 2 (2019) 155-238.
DOI: 10.1007/s42543-019-00011-4 arXiv: 1609.05397

1. S. Iyer
Steady Prandtl Boundary Layer Expansion of Navier-Stokes Flows over a Rotating Disk.
Arch. Rational Mech. Anal. 224 (2017), no.2, 421-469.
DOI: 10.1007/s00205-017-1080-9 arXiv: 1609.05397

Minicourses & Extended Lecture Series

Summer School: (In)-Stability Phenomena in Fluid Mechanics,
5 Lecture Minicourse: "Recent Progress in Stationary Boundary Layers"
CY Advanced Studies, Cergy, Paris, France — May 2024

Winter School: Boundary and Singularity in Fluid Mechanics
4 Lecture Minicourse: "Hydrodynamic Stability and Boundary Layers"
Simons Center for Geometry and Physics, Stony Brook, NY — January 2025

3 Lecture Minicourse: "Overview of Boundary Layer Theory"
Duke University, Durham, NC — April 2025

Research Talks

NCSU Differential Equations/ Nonlinear Analysis Seminar (virtual)	September 2026
Advances in Mathematical Fluid Dynamics, BICMR, Beijing, China	August 2026
Stanford University Analysis Seminar, Stanford, CA	March 2026
AMS Special Session, Recent Progress in PDE Models of Incompressible Fluids, Denver, CO,	August 2025
Pittsburgh Workshop on PDEs and Fluid Dynamics, Pittsburgh, PA	April 2025
Princeton University Analysis of Fluids and Related Topics Seminar, Princeton, NJ	February 2025
UC Berkeley Analysis and PDE Seminar, Berkeley, CA	January 2025
Singularities in Fluids and General Relativity, IMS Singapore, Singapore	December 2024
14th AIMS Conference (Thematic Speaker), Abu Dhabi, UAE	December 2024
Long Time Behavior and Singularity Formation in PDEs, Part VII, NYUAD, Abu Dhabi, UAE	December 2024
Nonlinear PDEs Related to Fluid Dynamics, Tokyo Inst. of Tech., Tokyo, Japan	November 2024
SIAM: First Northern and Central California Sectional Conference, Merced, CA	October 2024
Patterns in Solutions to the Incompressible Euler Equations, Bedlewo, Poland	August 2024
AMS Special Session, Mathematical Fluid Dynamics, San Francisco, CA	May 2024
Small Scale Dynamics in Incompressible Fluid Flows, AIM, Pasadena, CA	November 2023
KGTU Mathematics Workshop for Young Researchers, Kyoto University, Kyoto, Japan	October 2023
Penn State University, Applied Math Colloquium, State College, PA (virtual)	September 2023
University of Chile CMM PDE Seminar, Santiago, Chile	August 2023
Joint UCLA-Caltech-USC Analysis Seminar, Los Angeles, CA	May 2023
AMS Special Session, Nonlinear PDEs in Fluid Dynamics, Fresno, CA	May 2023
Lehigh University Applied Math and Analysis Seminar (virtual)	May 2023
University of Minnesota PDE Seminar, Minneapolis, MN	April 2023
AMS Special Session, Dynamics of Nonlinear PDE, Atlanta, GA	March 2023
CAMS Colloquium, USC, Los Angeles, CA	February 2023

	UC Berkeley Analysis and PDE Seminar, Berkeley, CA	November 2022
	Stanford University PDE Seminar, Stanford, CA	October 2022
	International PDE Conference, Shanghai Jiao-Tong University (Virtual)	July 2022
	London PDE Seminar Series	June 2022
	University of Pittsburgh Department Colloquium	April 2022
	City University of Hong Kong (Virtual)	March 2022
	SIAM Conference Analysis of PDEs (virtual)	March 2022
	UC Davis PDE/Applied Math Seminar, Davis, CA	March 2022
	Hamiltonian Methods and Asymptotic Dynamics, ICERM (Virtual)	December 2021
	Department Seminar, Shanghai Jiao-Tong University (Virtual)	July 2021
	Boundary Layers in Fluids, Cergy Paris University, Paris, France (Virtual)	June 2021
	AMS Western Sectional, San Francisco, CA (Virtual)	April 2021
	Nonlinear Evolution PDE, Shanghai, China (Virtual)	December 2020
	UMD PDE Seminar (Virtual)	October 2020
	OU Analysis Seminar (Virtual)	October 2020
	MU-MST Joint Analysis Seminar (Virtual)	September 2020
	UC Davis Department Colloquium	January 2020
	UC Davis PDE Seminar	October 2019
	Brown University PDE Seminar	September 2019
	NYU Abu-Dhabi Seminar	June 2019
	Courant Analysis Seminar	April 2019
	University of Pennsylvania Analysis Seminar	April 2019
	AMS Conference, Special Topics Singularities in Fluid Flows, Honolulu, Hawaii	March 2019
	Workshop on Theory of Boundary Layers and Related Topics, Shanghai, China	December 2018
	UCSD Analysis Seminar	October 2018
	University of Chicago FRG Conference	October 2018
	Princeton University New Faculty Talk	October 2018
	UCLA Analysis Seminar	January 2018
	University of Texas - Austin Analysis Seminar	December 2017
	University of Wisconsin - Madison PDE-Geometric Analysis Seminar	October 2017
	Brown University PDE Seminar	September 2017
	Brown/ Boston University PDE Seminar	December 2016
	Princeton University Analysis of Fluids Seminar	December 2016
	University of Virginia Harmonic Analysis and PDE Seminar	November 2016
	UMass Boston Physics Colloquium	October 2016
	Brown/ Boston University PDE Seminar	April 2016
	Brown University PDE Seminar	November 2015
	Deterministic and Stochastic Partial Differential Equations, Brown University	October 2015
Outreach Talks	GGAM Admissions Plenary Talk, UC Davis	March 2026
	COSMOS Summer Program, UC Davis	July 2025
	Lightning Talk for Prospective Graduate Students, UC Davis	March 2025
	Faculty Retreat, UC Davis	September 2024
	COSMOS Summer Program, UC Davis	July 2024
	Lightning Talk for Prospective Graduate Students, UC Davis	March 2024
	Careers in Academia, Keio University, Tokyo, Japan	October 2023
	Davis Math Day Conference, UC Davis	April 2022
	Lightning Talk for Prospective Graduate Students, UC Davis	February 2022
	Faculty Research Seminar (FRS), UC Davis	January 2022
Organization	Winter School: Boundary and Singularity in Fluid Mechanics Simons Center for Geometry and Physics, Stony Brook, NY	January 2025
	SIAM NCC	October 2026
Teaching	MAT127A: Real Analysis Section A01-A02, Instructor,	Fall 2025
	MAT127A: Real Analysis Section B01-B02, Instructor,	Fall 2025
	MAT201A: Analysis (Graduate), UC Davis, Instructor,	Fall 2025
	MAT127A: Real Analysis Section A01-A02, Instructor,	Fall 2024
	MAT127A: Real Analysis Section B01-B02, Instructor,	Fall 2024
	MAT201A: Analysis (Graduate), UC Davis, Instructor,	Fall 2023
	MAT127B: Real Analysis, UC Davis, Instructor,	Fall 2023
	MAT127A: Real Analysis Section B01, UC Davis, Instructor,	Winter 2023

MAT127A: Real Analysis, Section C01-C02, UC Davis, Instructor, Winter 2023
MAT21B: Integral Calculus, UC Davis, Instructor, Fall 2022
MAT21B: Integral Calculus, UC Davis, Instructor, Winter 2022
MAT127A: Real Analysis, UC Davis, Instructor, Fall 2021
MAT201: Multivariable Calculus, Princeton University, Instructor Spring 2021
MAT201: Multivariable Calculus, Princeton University, Instructor Fall 2020
MAT 175: Multivariable Calculus for Economics/ Life Sciences, Instructor Spring 2020
MAT 201: Multivariable Calculus, Princeton University, Instructor Fall 2019
APMA 0360: Methods of Applied Mathematics II (ODE/ PDE),
Brown University, Teaching Assistant Spring 2015
APMA 0350: Methods of Applied Mathematics I (ODE/ PDE),
Brown University, Teaching Assistant Fall 2014

Editorial Communications on Pure and Applied Analysis 2024 -

Academic Service

- **2026 - 2027**
  - **Departmental Service**
    GPC (Graduate Placement Committee) 2026-
    Graduate Admissions Committee (GMAT) 2026-
    Equivalencies Committee 2026 -
    Member of GGAM 2026 -
  - **University Service**
    Graduate Studies Faculty Review Committee 2026-
    * Internal Fellowship Competition Review Committee
  - **Service to Profession**
    SIAM NCC Organizing Committee Fall 2026 - October 2026
    Editorial Service: CPAA
    Editorial Service: QAM (Special Issue in Honor of Yan Guo)
    Referee Service:
    * Full Reports: PAA (1), SIMA (1), QAM (1, upcoming)
    * Quick Opinions: CPAM (1), JAMS (1),
    * Secondary Reports:
  - **Mentoring**
    Thesis Advising: N. Wiesner (MAT299D): 2026-
    Thesis Advising: K. Lim (MAT299): 2026-
    Graduate Faculty Advisor: S. Hutchins, R. Kaldybayev, E. Lew, K. Lim 2026-
    Letters:
    * TT: 1, PD: 3, GS: 3
- **2025 - 2026 (UC Davis)**
  Thesis Advising: N. Wiesner (MAT299, 299D(S)): 2025-2026
  Thesis Advising (official S2026): K. Lim (MAT299): Winter 2026 - Spring 2026
  Undergraduate Thesis Director: Lucas Lam (MAT199(W), 194(S)) Winter 2026 - Spring 2026
  Davis Math Lab Mentor (Lucas Lam's thesis) Spring 2026
  Qualifying Exam Committee: Ken Brown Dec 2025
  Thesis Committee: Gavin Pandya Fall 2025
  Graduate Faculty Advisor: S. Hutchins, R. Kaldybayev, E. Lew, K. Lim 2025-2026
  GPC (Graduate Placement Committee) 2025-2026
  Graduate Admissions Committee (GMAT) 2025-2026
  MAT38 and 108 Committee Spring 2026
  Hellman Fellows Review Committee Spring 2026
  SIAM NCC Organizing Committee Winter 2026 - Spring 2026
  Member of GGAM
  UC Davis Analysis and Applied Math Seminar Winter 2026
  Referee Service: July 1, 2025 - June 30, 2026:

  Math. Ann (1), JEMS (1QO), Adv. Math (1QO), Annals of Math (1QO), ARMA (1), Proc. London Math. Soc (1QO), CPAM (1QO).

- **2045 - 2025 (UC Davis)**

UC Davis Analysis and Applied Math Seminar — Fall 2024
Tenure Track Search Committee
Member of GGAM
Thesis Committee: Allen (Yifeng) Chen — September 2024
Qualifying Exam Committee: Ken Brown — May 2025
Graduate Directed Reading (MAT299) — Fall 2024
Undergraduate Directed Reading: Lucas Lam (MAT199) — Fall 2024
Initial Advising: Kessler, Thomson
Thesis Advising: N. Wiesner (MAT299, Official S2025) — Winter 2025, Spring 2025
Referee Service: — July 1, 2024 - June 30, 2025:

Trans. Amer. Math. Soc. (1), Comm. Math. Phys. (1), Nonlinearity (1), SIMA (1), Annals of Math. (1 QO), Physica D. (1), JMAA (1), ARMA (2), Nonlinear Analysis (1), Proc. Roy. Soc. Edinburgh Sect. A (1 QO), JDE (1), JFA (1), JEMS (1), JLMS (1 QO), Quart. App. Math (1)

- **2023 - 2024 (UC Davis)**

GPC (Graduate Placement Committee):
Graduate Admissions Committee:
UC Davis Analysis and Applied Math Seminar — Fall 2023, Winter 2024
Member of GGAM
Thesis Committee: Ryan-Chris Moreno Vasquez — 2021 -
Thesis Committee: Kyle Chickering — 2023 -
Thesis Committee: Gavin Pandya — 2023 -
Thesis Committee: Allen (Yifeng) Chen — 2024 -
Qualifying Exam Committee: Gavin Pandya — September 2023
Initial Advising: Kessler, Thomson
Graduate Directed Reading (MAT299) — Winter 2024
Referee Service: — July 1, 2023 - June 30, 2024:

Adv. Math. (1), Comm. Math. Sci. (1), Phys. D: Nonlinear Phenom.(1), Duke Math. J (1 QO), Comm. Pure Appl. Math (1 QO)

- **2022 - 2023 (UC Davis)**

UC Davis Internal Fellowship Review Committee — Winter 2023
Mathematics Department Displays Committee — Winter 2023
OGTA (Outstanding Graduate TA) Review Committee — Spring 2023
UC Davis Analysis and Applied Math Seminar — Fall 2022, Winter 2023
Thesis Committee: Ryan-Chris Moreno Vasquez — 2021 -
Thesis Committee: Kyle Chickering — 2023 -
Qualifying Exam Committee: Kyle Chickering — November 2022
Graduate Directed Reading (MAT299) — Spring 2023
Grant Reviewer for French ANR (agence national de la reserche) — Spring 2023
Member of GGAM
Outreach Events:

Presentation workshop for undergrads, UC Davis Mathematics Department — February 2023
MC for Davis Math alumni panel — May 2023

- **2021 - 2022 (UC Davis)**

Graduate Admissions Committee, UC Davis Mathematics Department — Winter 2022
Graduate Admissions Committee, UC Davis GGAM — Winter 2022
Thesis Committee: Ryan-Chris Moreno Vasquez — 2021 -
UC Davis Analysis and Applied Math Seminar — Fall 2021
Member of GGAM
Outreach Events:

Coffee with Profs, UC Davis — December 2021
Pizza with Faculty, UC Davis — November 2021
Applied Math/ PDE Seminar Meet and Greet Organization, UC Davis — October 2021

- **2018 - 2021 (Princeton University)**

Princeton Analysis of Fluids Seminar — Fall 2018 - Spring 2021

- **Referee Service (prior to 7.1.2023):**

Inventiones Mathematicae, Journal of European Mathematical Society (JEMS), Advances in Mathematics, Archive for Rational Mechanics and Analysis, Communications in Pure and Applied Mathematics, Communications in Mathematical Physics, Communications in Mathematical Sciences, SIAM J. Mathematical Analysis, Journal of Mathematical Fluid Mechanics, Annales Institute Henri Poincare, Calculus of Variations and PDE, Discrete Continuous Dynamical Systems (DCDS), International Mathematics Research Notices (IMRN), Israel Journal of Mathematics, Journal of Differential Equations, Journal of Mathematical Physics, Mathematische Annalen, Peking Math. Journal, Physica D, Science China Mathematics, Analysis & PDE