

Theodore Dimitrios Drivas

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Position	Assistant Professor , Department of Mathematics, Stony Brook University	
Education	University of Chicago B.S., Mathematics & Physics with Honors Advisor: Robert M. Wald	2007 – 2011
	Johns Hopkins University Ph.D., Applied Mathematics & Statistics Advisor: Gregory L. Eyink	2011 – 2017
Academic History	Stony Brook University Associate Professor Assistant Professor	2025 – 2021 – 2025
	Institute for Advanced Study Member , School of Mathematics	2022
	Princeton University Assistant Professor NSF Postdoctoral Fellow (Sponsor: P. Constantin)	2020 – 2021 2017 – 2020
Professional	SchoolNova , https://schoolnova.org Teacher : 5th grade Mathematics on Sundays	2022 –
	Johns Hopkins Applied Physics Laboratory (JHU APL) Oceanic, Atmospheric and Remote Sensing Sciences Group	2013 – 2016
Awards & Grants	<ul style="list-style-type: none">Emerging Leaders Cohort, Stony Brook UniversityStony Brook Trustees Faculty Award (\$20,000)Mercator Fellowship, German National Science Foundation (DFG)Alfred P. Sloan Research Fellowship in Mathematics (\$75,000)NSF CAREER Award, #2235395 (\$500,000)NSF Research Grant, #2106233 (\$239,995)Charles Simonyi Endowment, Institute for Advanced StudyNSF Postdoctoral Research Fellowship, #1703997 (\$150,000)	2024–2025 2024 2024 2024 – 2026 2023 – 2028 2021 – 2024 2022 2017 – 2020
Editorial	<ul style="list-style-type: none">Nonlinearity (Associate Editor)Physica D (Early Career Editorial Board)	2022 – 2022 –
PhD Students	Daniil Glukhovskiy (Stony Brook University) Jonathan Li (Johns Hopkins University) Woohyu Jeon (Stony Brook University)	2021 – 2023 – 2024 –
Selected Recent Publications	<ul style="list-style-type: none">Theodore D. Drivas, Tarek M. Elgindi, and In-Jee Jeong. <i>Twisting in Hamiltonian flows and perfect fluids</i>. Inventiones mathematicae, 238, 331–370 (2024)Theodore D. Drivas, Alexei A. Mailybaev, and Artem Raibekas. <i>Statistical determinism in non-Lipschitz dynamical systems</i>. Ergodic Theory and Dynamical Systems 44.7 (2024): 1856-1884.Theodore D. Drivas and Tarek M. Elgindi. <i>Singularity formation in the incompressible Euler equation in finite and infinite time</i>. EMS Surveys in Mathematical Sciences 10.1 (2023): 1-100.Peter Constantin, Theodore D. Drivas, and Daniel Ginsberg. <i>Flexibility and rigidity in steady fluid motion</i>. Communications in Mathematical Physics 385 (2021): 521-563.Theodore D. Drivas, Tarek M. Elgindi, Gautam Iyer, and In-Jee Jeong. <i>Anomalous dissipation in passive scalar transport</i>. Archive for Rational Mechanics and Analysis (2022): 1-30.Theodore D. Drivas, <i>Turbulent cascade direction and Lagrangian time-asymmetry</i>. Journal of Nonlinear Science 29.1 (2019): 65-88.	

Preprints	Funding
53. L. De Rosa, T.D. Drivas, M. Inversi and P. Isett <i>Intermittency and dissipation regularity in turbulence</i> , submitted , (2024) arXiv: 2502.10032	Sloan Fellowship NSF #2235395 NSF #2106233
52. T.D. Drivas and M. Nualart, <i>A geometric characterization of steady laminar flow</i> , submitted , (2024) arXiv: 2410.18946	Sloan Fellowship NSF #2235395 NSF #2106233
51. T.D. Drivas, D. Glukhovskiy, and B. Khesin, <i>Pensive billiards, point vortices, and pucks</i> , submitted , (2024) arXiv: 2408.03279	Sloan Fellowship NSF #2235395 NSF #2106233
50. G.L. Eyink and T.D. Drivas, <i>Quantum Spontaneous Stochasticity</i> , preprint , (2017) arXiv: 1509.04941	
Journal Publications	Funding
49. T.D. Drivas, T. Elgindi, I-J Jeong, <i>Twisting in Hamiltonian Flows and Perfect Fluids</i> , Inventiones mathematicae , 238, 331–370 (2024) DOI: 10.1007/s00222-024-01285-x arXiv: 2305.09582	Sloan Fellowship NSF #2235395 NSF #2106233
48. L. De Rosa, T.D. Drivas, and M. Inversi, <i>On the support of anomalous dissipation measures</i> , Journal of Mathematical Fluid Mechanics , 26, 56 (2024) DOI: 10.1007/s00021-024-00894-z arXiv: 2301.09603	NSF #2235395 NSF #2106233
47. T.D. Drivas, D. Glukhovskiy, and B. Khesin, <i>Singular vortex pairs follow magnetic geodesics</i> , International Mathematics Research Notices , (14), 10880–10894 (2024) DOI: 10.1093/imrn/rnae106 arXiv: 2401.08512	Sloan Fellowship NSF #2235395 NSF #2106233
46. T.D. Drivas, S. Iyer, T.T. Nguyen, <i>The Feynman–Lagerstrom criterion for boundary layers</i> , Archive for Rational Mechanics and Analysis , 248, 55 (2024) DOI: 10.1007/s00205-024-01991-z arXiv: 2308.15447	NSF #2235395 NSF #2106233
45. T.D. Drivas, D. Ginsberg, <i>Islands in stable fluid equilibria</i> , Proceedings of the American Mathematical Society , 152, 4855–4863 (2024) DOI: 10.1090/proc/16951 arXiv: 2305.11150	NSF #2235395 NSF #2106233
44. M. Coti Zelati, T.D. Drivas, R. Gvalani <i>Statistically self-similar mixing by Gaussian random fields</i> , Journal of Statistical Physics , 191, 61 (2024) DOI: 10.1007/s10955-024-03277-w arXiv: 2309.15744	NSF #2235395 NSF #2106233
43. T. Buckmaster, T.D. Drivas, S. Shkoller, and V. Vicol <i>Formation and development of singularities for the compressible Euler equations</i> , Proc. Int. Cong. Math. 2022 , Vol. 5, pp. 3636–3659. EMS Press, Berlin, 2023, DOI: 10.4171/icm2022/87	NSF #2106233
42. S. Ananda, M. Bertagni, T.D. Drivas, and A. Porporato, <i>Self-Similarity and Vanishing Diffusion Limit in Fluvial Landscapes</i> , Proceedings of the National Academy of Sciences , (2023) DOI: 10.1073/pnas.2302401120 arXiv: 2401.04113	NSF #2235395 NSF #2106233

41. T.D. Drivas, A.A. Mailybaev, and A. Raibekas,
Statistical determinism in non-Lipschitz dynamical systems,
Ergodic Theory and Dynamical Systems, 1-29. (2023) NSF #2235395
DOI:[10.1017/etds.2023.74](https://doi.org/10.1017/etds.2023.74) arXiv:[2004.03075](https://arxiv.org/abs/2004.03075) NSF #2106233
40. T.D. Drivas, D. Ginsberg, and H. Grayer II,
On the distribution of heat in fibered magnetic fields,
Communications in Mathematical Physics, 405, 57 (2024) NSF #2235395
DOI:[10.1007/s00220-023-04886-4](https://doi.org/10.1007/s00220-023-04886-4) arXiv:[2210.09968](https://arxiv.org/abs/2210.09968) NSF #2106233
39. T.D. Drivas, A. Dunlap, C. Graham, J. La, and L. Ryzhik,
Invariant measures for stochastic conservation laws on the line,
Nonlinearity 36 4553, (2023) Charles Simonyi Endowment
DOI:[10.1088/1361-6544/acdb3a](https://doi.org/10.1088/1361-6544/acdb3a) arXiv:[2201.12641](https://arxiv.org/abs/2201.12641) NSF #2106233
38. T.D. Drivas, T.M. Elgindi, and J. La
Propagation of singularities by Osgood vector fields and for 2D inviscid incompressible fluids,
Mathematische Annalen, (2022) Charles Simonyi Endowment
DOI:[10.1007/s00208-022-02498-2](https://doi.org/10.1007/s00208-022-02498-2) arXiv:[2203.15554](https://arxiv.org/abs/2203.15554) NSF #2106233
37. M. Dolce and T.D. Drivas
On maximally mixed equilibria of two-dimensional perfect fluids,
Archive for Rational Mechanics and Analysis, 246, 735–770 (2022). Charles Simonyi Endowment
DOI:[10.1007/s00205-022-01825-w](https://doi.org/10.1007/s00205-022-01825-w) arXiv:[2204.03587](https://arxiv.org/abs/2204.03587) NSF #2106233
36. T.D. Drivas and T.M. Elgindi,
Singularity formation in the incompressible Euler equation in finite and infinite time,
EMS Surveys in Mathematical Sciences, 10 (2023), no. 1, pp. 1–100 Charles Simonyi Endowment
DOI:[10.4171/EMSS/66](https://doi.org/10.4171/EMSS/66) arXiv:[2203.17221](https://arxiv.org/abs/2203.17221) NSF #2106233
35. T. Buckmaster, T.D. Drivas, S. Shkoller, and V. Vicol
Simultaneous development of shocks and cusps for 2D Euler with azimuthal symmetry,
Annals of PDE, 8:26 (2022) (2022) Charles Simonyi Endowment
DOI:[10.1007/s40818-022-00141-6](https://doi.org/10.1007/s40818-022-00141-6) arXiv:[2106.02143](https://arxiv.org/abs/2106.02143) NSF #2106233
34. P. Constantin, T.D. Drivas, and D. Ginsberg,
Flexibility and rigidity of free boundary MHD equilibria,
Nonlinearity, 35 2363 (2022) Charles Simonyi Endowment
DOI:[10.1088/1361-6544/ac5d6a](https://doi.org/10.1088/1361-6544/ac5d6a) arXiv:[2108.05977](https://arxiv.org/abs/2108.05977) NSF #2106233
33. T.D. Drivas,
Self-Regularization in turbulence from the Kolmogorov 4/5th Law and Alignment,
Philosophical Transactions of the Royal Society A, 380: 20210033 (2022) Charles Simonyi Endowment
DOI:[10.1098/rsta.2021.0033](https://doi.org/10.1098/rsta.2021.0033) arXiv:[2111.03493](https://arxiv.org/abs/2111.03493) NSF #2106233
32. L. Bentkamp, T.D. Drivas, C.C. Lalescu, and M. Wilczek,
The statistical geometry of material loops in turbulence,
Nature Communications, 13, 2088 (2022). Charles Simonyi Endowment
DOI:[10.1038/s41467-022-29422-1](https://doi.org/10.1038/s41467-022-29422-1) arXiv:[2106.11622](https://arxiv.org/abs/2106.11622) NSF #2106233
• MPI-DS [press release](#).
31. T.D. Drivas, H.Q. Nguyen, and C. Nobili,
Bounds on heat flux for Rayleigh-Bénard convection between Navier-slip fixed-temperature boundaries,
Philosophical Transactions of the Royal Society A, (2021) Charles Simonyi Endowment
DOI:[10.1098/rsta.2021.0025](https://doi.org/10.1098/rsta.2021.0025) arXiv:[2109.13205](https://arxiv.org/abs/2109.13205) NSF #2106233
30. T.D. Drivas, T.M. Elgindi, G. Iyer, and I–J. Jeong,
Anomalous Dissipation in Passive Scalar Transport,
Archive for Rational Mechanics and Analysis, 243, 1151-1180 (2022) Charles Simonyi Endowment
DOI:[10.1007/s00205-021-01736-2](https://doi.org/10.1007/s00205-021-01736-2) arXiv:[1911.03271](https://arxiv.org/abs/1911.03271) NSF #1703997
29. T.D. Drivas and J. La,
Boundary conditions and polymeric drag reduction for the Navier-Stokes equations,
Archive for Rational Mechanics and Analysis, 242(1), 485-526 (2021) Charles Simonyi Endowment
DOI:[10.1007/s00205-021-01689-6](https://doi.org/10.1007/s00205-021-01689-6) arXiv:[1904.08481](https://arxiv.org/abs/1904.08481) NSF #1703997

28. T.D. Drivas, G. Misiołek, B. Shi, and T. Yoneda,
Conjugate and cut points in ideal fluid motion,
Annales Mathématiques du Québec, A. Shnirelman's 75th birthday issue, (2021).
DOI:[10.1007/s40316-021-00176-4](https://doi.org/10.1007/s40316-021-00176-4) arXiv:[2105.11869](https://arxiv.org/abs/2105.11869) NSF #1703997
27. P. Constantin, T.D. Drivas, and D. Ginsberg,
Flexibility and rigidity in steady fluid motion,
Communications in Mathematical Physics, 385.1, 521-563 (2021)
DOI:[10.1007/s00220-021-04048-4](https://doi.org/10.1007/s00220-021-04048-4) arXiv:[2007.09103](https://arxiv.org/abs/2007.09103) NSF #1703997
26. P. Constantin, T.D. Drivas, and D. Ginsberg,
On quasisymmetric plasma equilibria sustained by small force,
Journal of Plasma Physics, 87.1 (2021)
DOI:[10.1017/S0022377820001610](https://doi.org/10.1017/S0022377820001610) arXiv:[2009.08860](https://arxiv.org/abs/2009.08860) NSF #1703997
• Princeton University [press release](#)
25. D.C. Saunders, G. Frederick, T.D. Drivas, and S. Wunsch,
Self-similar decay of the drag wake of a dimpled sphere,
Physical Review Fluids, 5, 124607, (2020)
DOI:[10.1103/PhysRevFluids.5.124607](https://doi.org/10.1103/PhysRevFluids.5.124607) NSF #1703997
24. T.D. Drivas and A.A. Mailybaev,
"Life after death" in ordinary differential equations with a non-Lipschitz singularity,
Nonlinearity, 34 2296, (2021)
DOI:[10.1088/1361-6544/abbe60](https://doi.org/10.1088/1361-6544/abbe60) arXiv:[1806.09001](https://arxiv.org/abs/1806.09001) NSF #1703997
23. P. Constantin, T.D. Drivas and R. Shvydkoy,
Entropy Hierarchies for equations of compressible fluids and self-organized dynamics,
SIAM Journal Mathematical Analysis, 52 (3), 3073-3092 (2020)
DOI:[10.1137/19M1278983](https://doi.org/10.1137/19M1278983) arXiv:[1908.01784](https://arxiv.org/abs/1908.01784) NSF #1703997
22. P. Constantin, T.D. Drivas and T.M. Elgindi,
Inviscid limit of vorticity distributions in Yudovich class,
Communications on Pure and Applied Mathematics, (2020)
DOI:[10.1002/cpa.21940](https://doi.org/10.1002/cpa.21940) arXiv:[1909.04651](https://arxiv.org/abs/1909.04651) NSF #1703997
21. M. Coti Zelati and T.D. Drivas,
A stochastic approach to enhanced diffusion,
Annali della Scuola Normale Superiore di Pisa, Classe di Scienze, (2020)
DOI:[10.2422/2036-2145.201911_013](https://doi.org/10.2422/2036-2145.201911_013) arXiv:[1911.09995](https://arxiv.org/abs/1911.09995) NSF #1703997
20. T.D. Drivas, D.D. Holm, and J-M. Leahy,
Lagrangian averaged stochastic advection by Lie transport for fluids,
Journal of Statistical Physics, 1-39 (2020)
DOI:[10.1007/s10955-020-02493-4](https://doi.org/10.1007/s10955-020-02493-4) arXiv:[1908.11481](https://arxiv.org/abs/1908.11481) NSF #1703997
19. T.D. Drivas and D.D. Holm,
Energy and Circulation Theorem Preserving Stochastic Fluids,
Proceedings of the Royal Society of Edinburgh: Section A Mathematics, 1-39, (2019)
DOI:[10.1017/prm.2019.43](https://doi.org/10.1017/prm.2019.43) arXiv:[1808.05308](https://arxiv.org/abs/1808.05308) NSF #1703997
18. T.D. Drivas and G.L. Eyink,
An Onsager Singularity Theorem for Leray Solutions of the Navier-Stokes Equations,
Nonlinearity, 32.11, 4465, (2019)
DOI:[10.1088/1361-6544/ab2f42](https://doi.org/10.1088/1361-6544/ab2f42) arXiv:[1710.05205](https://arxiv.org/abs/1710.05205) NSF #1703997
17. P. Constantin, T.D. Drivas, H.Q. Nguyen and F. Pasqualotto,
Compressible Fluids and Active Potentials,
Annales de l'Institut Henri Poincaré C, Analyse Non Linéaire, (2019)
DOI:[10.1016/j.anihpc.2019.04.001](https://doi.org/10.1016/j.anihpc.2019.04.001) arXiv:[1803.04492](https://arxiv.org/abs/1803.04492) NSF #1703997
16. T.D. Drivas,
Turbulent Cascade Direction and Lagrangian Time-Asymmetry,
Journal of Nonlinear Science, 29: 65, (2019)
DOI:[10.1007/s00332-018-9476-8](https://doi.org/10.1007/s00332-018-9476-8) arXiv:[1802.02289](https://arxiv.org/abs/1802.02289) NSF #1703997
• [Experimental support](#): Cheminet et al., *Physical Review Letters* (2022)

15. T.D. Drivas and H.Q. Nguyen,
Remarks on the emergence of weak Euler solutions in the vanishing viscosity limit,
Journal of Nonlinear Science, 1-13, (2018)
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14. T.D. Drivas and H.Q. Nguyen,
Onsager's conjecture and anomalous dissipation on domains with boundary,
SIAM Journal Mathematical Analysis, 50(5), 4785–4811 (2018)
DOI:[10.1137/18M1178864](https://doi.org/10.1137/18M1178864) arXiv:[1803.05416](https://arxiv.org/abs/1803.05416) NSF #1703997
13. T.D. Drivas and G.L. Eyink,
An Onsager Singularity Theorem for Turbulent Solutions of Compressible Euler Equations,
Communications in Mathematical Physics, 359: 733, (2018)
DOI:[10.1007/s00220-017-3078-4](https://doi.org/10.1007/s00220-017-3078-4) arXiv:[1704.03409](https://arxiv.org/abs/1704.03409) NSF #1703997
12. G.L. Eyink and T.D. Drivas,
Cascades and Dissipative Anomalies in Compressible Fluid Turbulence,
Physical Review X, 8, 011022, (2018)
DOI:[10.1103/PhysRevX.8.011022](https://doi.org/10.1103/PhysRevX.8.011022) arXiv:[1704.03532](https://arxiv.org/abs/1704.03532)
11. G.L. Eyink and T.D. Drivas,
Cascades and Dissipative Anomalies in Relativistic Fluid Turbulence,
Physical Review X, 8, 011023, (2018)
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10. T.D. Drivas, P.L. Johnson, C.C. Lalescu and M. Wilczek,
On the large-scale sweeping of small-scale eddies in turbulence – A filtering approach.
Physical Review Fluids, 2, 104603, (2017)
DOI:[10.1103/PhysRevFluids.2.104603](https://doi.org/10.1103/PhysRevFluids.2.104603) arXiv:[2307.11195](https://arxiv.org/abs/2307.11195)
9. G.L. Eyink and T.D. Drivas,
A Lagrangian fluctuation-dissipation relation for scalar turbulence, III. Rayleigh-Bénard convection,
Journal of Fluid Mechanics, 836, 560-598, (2017)
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8. T.D. Drivas and G.L. Eyink,
A Lagrangian fluctuation-dissipation relation for scalar turbulence, II. Wall-bounded flows,
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DOI:[10.1017/jfm.2017.571](https://doi.org/10.1017/jfm.2017.571) arXiv:[1703.08133](https://arxiv.org/abs/1703.08133)
7. T.D. Drivas and G.L. Eyink,
A Lagrangian fluctuation-dissipation relation for scalar turbulence, I. Flows with no bounding walls,
Journal of Fluid Mechanics, 829, 153-189 (2017)
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6. T.D. Drivas and S.E. Wunsch,
Triad Resonance between Gravity and Vorticity Waves in Vertical Shear,
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DOI:[10.1016/j.ocemod.2015.10.002](https://doi.org/10.1016/j.ocemod.2015.10.002)
5. C.C. Lalescu, Y-K. Shi, G.L. Eyink, T.D. Drivas, E. Vishniac and A. Lazarian,
Inertial-Range Reconnection in Magnetohydrodynamic Turbulence and in the Solar Wind,
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DOI:[10.1103/PhysRevLett.115.025001](https://doi.org/10.1103/PhysRevLett.115.025001) arXiv:[1503.00509](https://arxiv.org/abs/1503.00509)
4. G.L. Eyink and T.D. Drivas,
Spontaneous Stochasticity and Anomalous Dissipation in Burgers Equation,
Journal of Statistical Physics, 158, Issue 2, 386–432 (2014).
DOI:[10.1007/s10955-014-1135-3](https://doi.org/10.1007/s10955-014-1135-3) arXiv:[1401.5541](https://arxiv.org/abs/1401.5541)
3. D. Benveniste and T.D. Drivas,
Asymptotic results for backwards two-particle dispersion in a turbulent flow,
Physical Review E, 89, 041003(R) (2014).
DOI:[10.1103/PhysRevE.89.041003](https://doi.org/10.1103/PhysRevE.89.041003) arXiv:[1401.0521](https://arxiv.org/abs/1401.0521)

2. A.I. Harte and T.D. Drivas,
Caustics and wave propagation in curved spacetimes,
Physical Review D, 85, 124039 (2012).
DOI:[10.1103/PhysRevD.85.124039](https://doi.org/10.1103/PhysRevD.85.124039) arXiv:[1202.0540](https://arxiv.org/abs/1202.0540)
1. T.D. Drivas and S.E. Gralla,
Dependence of Self-Force on Central Object,
Classical and Quantum Gravity, 28, 145025 (2011).
DOI:[10.1088/0264-9381/28/14/145025](https://doi.org/10.1088/0264-9381/28/14/145025) arXiv:[1009.0504](https://arxiv.org/abs/1009.0504)

Conference Proceedings

Funding

2. T.D. Drivas,
Wall Bounded Turbulence and Polymer Drag Reduction,
Oberwolfach Science Reports, (2019). NSF #1703997
url:https://publications.mfo.de/bitstream/handle/mfo/3786/0WR_2019_38.pdf?sequence=1&isAllowed=y
1. S.E. Wunsch and T.D. Drivas,
Internal tide energy transfer by nonlinear refraction,
VIIIth International Symposium on Stratified Flows, Vol. 1. No. 1. (2016).
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Theses

3. *Anomalous Dissipation, Spontaneous Stochasticity & Onsager's Conjecture*.
Ph.D. Dissertation, Johns Hopkins University Press, 2017.
url:<https://jscholarship.library.jhu.edu/handle/1774.2/44694>
2. *Stochastic Representations of Solutions to the Viscous Hamilton-Jacobi Equations*.
Masters Dissertation, Johns Hopkins University Press, 2013.
1. *Scalar Wave Propagation on Plane Wave Spacetimes*.
S.B. Honors Thesis, University of Chicago, 2011.

Invited Research Visits

- | | |
|---|---------------------|
| 13. <i>Max Planck Institute for Mathematics in the Sciences</i> , Leipzig Germany
Host: Laszlo Szekelyhidi | 05/2024
1 weeks |
| 12. <i>Isaac Newton Institute for Mathematical Sciences</i> , Cambridge, England (virtual)
Program: Mathematical aspects of turbulence: where do we stand? | 01/2021
3 weeks |
| 11. <i>Korean Institute for Advanced Study (KIAS)</i> , Seoul, South Korea
Host: In-Jee Jeong | 09/2019
2 weeks |
| 10. <i>Max-Planck-Institut für Dynamik und Selbstorganisation</i> , Göttingen, Germany
Host: Michael Wilczek | 08/2019
2 weeks |
| 9. <i>Department of Mathematics, University of Pisa</i> , Italy
Host: Marco Romito | 06/2019
3 weeks |
| 8. <i>Department of Mathematics, Imperial College</i> , London, UK
Host: Michele Coti Zelati | 06/2019
1 week |
| 7. <i>Instituto de Matemática Pura e Aplicada (IMPA)</i> , Rio de Janeiro, Brazil
Host: Alexei Mailybaev | 01/2019
1 month |
| 6. <i>Department of Mathematics, Imperial College</i> , London, UK
Host: Darryl Holm | 06/2018
1 week |
| 5. <i>Department of Mathematics, UC San Diego</i> , California, USA
Host: Tarek Elgindi | 05/2018
1 week |
| 4. <i>Instituto de Matemática Pura e Aplicada (IMPA)</i> , Rio de Janeiro, Brazil
Host: Alexei Mailybaev | 08/2017
2 weeks |
| 3. <i>Hausdorff Center for Mathematics (HCM)</i> University of Bonn, Germany
Host: Mircea Petrache | 05/2017
1 week |
| 2. <i>Max-Planck-Institut für Dynamik und Selbstorganisation</i> , Göttingen, Germany
Host: Michael Wilczek | 05/2015
3 weeks |
| 1. <i>Institute for Pure and Applied Mathematics (IPAM)</i> , UCLA, Los Angeles, CA
Visiting Graduate Researcher | 09/2014
3 months |

**Seminar &
Colloquium
Talks**

82. Analysis Seminar, University of Pisa, Pisa Italy	04/2025
81. Analysis & PDE Seminar, Gran Sasso Science Institute, L'Aquila Italy	04/2025
80. Colloquium, Tulane University, New Orleans, LA	03/2025
79. Analysis Seminar, Duke University, Durham NC	02/2025
78. Colloquium, Florida State University, Tallahassee FL	02/2025
77. Analysis Seminar, University of Pittsburg, Pittsburg PA	02/2025
76. Analysis Seminar, Princeton University Mathematics Department, Princeton, NJ	01/2025
75. Computational and Applied Mathematics Colloquium, Penn State, State College PA	11/2024
74. Colloquium, Max Planck Institute for Mathematics in the Sciences, Leipzig Germany	05/2024
73. PDE Seminar, Brown University, Providence RI	04/2024
72. Colloquium, Georgetown University, Washington DC	04/2024
72. Mathematical Physics Seminar, Johns Hopkins University, Maryland	04/2024
71. Analysis of Fluids and Related Topics Seminar, Princeton, New Jersey	10/2023
70. PDE seminar, Purdue University, IL	09/2023
69. JHU/Lyon Working Seminar, Online	09/2023
68. Analysis and PDE Seminar, Berkeley, CA	03/2023
67. JHU/Lyon Working Seminar, Online	02/2023
66. Analysis Seminar, Texas Tech University	02/2023
65. Hyperbolic & Dispersive PDE Seminar, Rutgers University	11/2022
64. Department of Physics Colloquium, Michigan Tech University	10/2022
63. Analysis Seminar, Seoul National University (SNU), South Korea	10/2022
62. Non-linear analysis/differential equations seminar, North Carolina State	10/2022
61. Chair for Dynamics, Control and Numerics, Friedrich-Alexander-Universität, Germany	10/2022
60. Analysis & PDE seminar, Stanford University	05/2022
59. Analysis Seminar, Institute for Advanced Study https://www.youtube.com/watch?v=Z2CkJxBfyZI	05/2022
58. Analysis Seminar, University of Maryland	05/2022
57. Applied Mathematics Colloquium, Penn State, Pennsylvania	02/2022
56. London PDE Seminar (Online), London, UK	02/2022
55. Analysis Seminar, Duke University, NC	02/2022
54. Short talk, Institute for Advanced Study, Princeton, NJ https://www.youtube.com/watch?v=1aE399e9PVo	02/2022
53. Transport, Fluids and Mixing, Centro De Giorgi - Pisa, Italy	01/2022
52. JHU/Lyon Working Seminar, Online	12/2021
51. Hamiltonian Systems Seminar, University of Toronto	11/2021
50. CAMS colloquium, USC, Los Angeles, CA. https://www.youtube.com/watch?v=x4HB3aog0wA	11/2021
49. Seminar In the Analysis and Methods of PDE (SIAM PDE) webinar https://www.youtube.com/watch?v=mW03wUqk8ek	11/2021
48. Analysis of Fluids and Related Topics Seminar, Princeton, New Jersey	10/2021
47. Stony Brook Mathematics Colloquium, Stony Brook, NY	09/2021
46. Analysis Seminar, Seoul National University, Online	07/2021
45. Wave Turbulence Seminar, Online https://www.youtube.com/watch?v=XB-svY2s4jc	06/2021
44. CUNY Einstein Chair Mathematics Seminar, CUNY, NYC	05/2021
43. CUNY Einstein Chair Mathematics Seminar, CUNY, NYC	05/2021
42. Open PDE & Analysis Seminar, Online	04/2021
41. Nonlinear PDE seminar, Texas A & M University	04/2021
40. JHU/Lyon Working Seminar, Online	03/2021
39. CUNY Einstein Chair Mathematics Seminar, CUNY, NYC	02/2021
38. Mathematics Seminar, Duke University, NC	02/2021
37. Colloquium, University of Nebraska, NE	02/2021
36. CUNY Einstein Chair Mathematics Seminar, CUNY, NYC	02/2021
35. CUNY Einstein Chair Mathematics Seminar, CUNY, NYC	12/2020
34. Analysis Seminar, Princeton, New Jersey	11/2020
33. CUNY Einstein Chair Mathematics Seminar, CUNY, NYC	11/2020
32. Analysis and PDE Seminar, ShanghaiTech, Shanghai, China	05/2020
31. CUNY Einstein Chair Mathematics Seminar, CUNY, NYC	03/2020

30.	Courant Institute Analysis Seminar, NYU, New York City	02/2020
29.	Departmental Colloquium, University of Maryland, MD	01/2020
28.	Probability Seminar, Penn State, Pennsylvania	01/2020
27.	PDE Seminar, Vanderbilt University, Nashville, TN	12/2019
26.	Departmental Colloquium, SUNY Stony Brook, NY	11/2019
25.	Center for Nonlinear Analysis Seminar, Carnegie Mellon, PA	11/2019
24.	PDE and Analysis Seminar, University of Pittsburgh, PA	11/2019
23.	Analysis Seminar, Duke University, NC	11/2019
22.	PDE/Applied Math seminar, UC Davis, CA	11/2019
21.	Analysis Seminar, Korean Institute for Advanced Study (KIAS), Seoul, South Korea	09/2019
20.	Seminar, Max-Planck-Institut für Dynamik und Selbstorganisation, Göttingen	08/2019
19.	Analysis and Probability Seminar, University of Pisa	06/2019
18.	Analysis and Applied Mathematics Seminar, University of Illinois Chicago	05/2019
17.	Center for Environmental & Applied Fluid Mechanics Seminar (CEAFM), JHU	05/2019
16.	Departmental Colloquium, SUNY Stony Brook, NY	11/2018
15.	Common Room Math Gathering, SUNY Stony Brook, NY	06/2018
14.	Fluid Dynamics Seminar, NYU Tandon School of Engineering, Brooklyn, NY	05/2018
13.	Analysis Seminar, UCSD, San Diego, CA	05/2018
12.	Applied Math Seminar, Tulane, New Orleans, LA	04/2018
11.	Courant Institute Analysis Seminar, NYU, New York City	04/2018
10.	CAMS colloquium, USC, Los Angeles, CA.	02/2018
9.	Astrophysics SFIR/MHD group meeting, Princeton, New Jersey	11/2017
8.	Ergodic Theory and Statistical Mechanics Seminar, Princeton, New Jersey	10/2017
7.	New Faculty Talks, Princeton, New Jersey	10/2017
6.	Analysis of Fluids and Related Topics Seminar, Princeton, New Jersey	10/2016
5.	Harmonic Analysis & PDEs Seminar, University of Virginia, Virginia	05/2016
4.	PDE-Applied Math Seminar, University of Maryland, Maryland	04/2016
3.	Lecture on Turbulence, Part II: 2D, University of Maryland, Maryland	12/2016
2.	Lecture on Turbulence, Part I: 3D, University of Maryland, Maryland	12/2016
1.	Colloquium, Max-Planck-Institut für Dynamik und Selbstorganisation, Göttingen	05/2015
Conference & Workshop Talks		
53.	Infinite Dimensional Geometry and Fluids, BIRS Workshop, Banff Canada https://www.birs.ca/events/2023/5-day-workshops/23w5020/videos/watch/202311071101-Drivas.html	10/2023
52.	Nonlinear PDEs in Fluids and Waves, AMS Sectional, SUNY Buffalo	09/2023
51.	Recent Advances in Mathematical Fluid Dynamics, Duke University	05/2023
50.	Spring Lecture Series, University of Arkansas https://video.uark.edu/media/UofA+Spring+Lecture+Series/1_hht37110	04/2023
49.	AMS Special Session on Turbulence and Mixing in Fluid Dynamics, III	03/2023
48.	Problems at the Interface of Mathematics and Physics, ICTS Bengaluru https://www.youtube.com/watch?v=YjRr9wiwIz4	01/2023
47.	David Ebin's 80th birthday conference, Stony Brook University	01/2023
46.	Modelling and analysis of turbulent transport, mixing and scaling. INI, Cambridge https://www.newton.ac.uk/seminar/35273	03/2022
45.	Hydrodynamical Equations: New Challenges at the Math-Physics Interface, BIRS http://www.birs.ca/events/2022/5-day-workshops/22w5015/videos/watch/202202281602-Drivas.html	02/2022
44.	New Mechanisms for Regularity, Singularity, and Long Time Dynamics in Fluid Equations, BIRS	07/2021
43.	New Developments in Mathematical Fluid Dynamics, MCA, Buenos Aires, Argentina	07/2021
42.	SIAM Conference on Dynamical Systems	05/2021
41.	Workshop – Fundamentals of compressible turbulence, Online	05/2021
40.	Many Faces of Renormalization workshop, Simons Center, Stony Brook, NY	03/2021
39.	Transport and Mixing in Complex and Turbulent Flows, IPAM, CA, https://www.youtube.com/watch?v=BFndTgqeI9I&t=1191s	01/2021
38.	AMS Special Session: PDEs, data, and inverse problems, University of Utah, Utah	10/2020
37.	AMS Fall Eastern Sectional I Meeting, Penn State, PA	10/2020
36.	Advances in High and Infinite Dimensional Stochastic Analysis, AMS Sect., Charlottesville, VA	03/2020
35.	Inviscid Fluid Dynamics, SIAM APDE, La Quinta, CA	12/2019
34.	AMS Special Session #10A, Binghamton, NY	10/2019

	33. Invited Plenary Address , Formation of small scales in nonlinear PDEs, CSCAMM, University of Maryland, MD	09/2019
	32. Mathematical Aspects of Hydrodynamics, Oberwolfach Workshop ID 1934, Germany	08/2019
	31. Essence of $(u \cdot \nabla)u$: Reflections on Mathematical Fluid Dynamics, UVA, VA	3/2019
	30. Ki-Net/CSCAMM Mathematical Aspects of Collective Dynamics: Kinetic Description and Fractional Diffusion, UMaryland, MD	3/2019
	29. Workshop on New Ideas and Tools for Turbulence, IAS Princeton	3/2019
	28. Recent Developments on Fluid Turbulence, AMS Sect. Meeting, Fayetteville, AR	11/2018
	27. Recent Advances in Mathematical Fluid Mechanics, AMS Sect. Meeting, Fayetteville, AR	11/2018
	26. Invited Plenary Address , 3rd Annual NEAM (Northeastern Analysis Meeting), State University of New York (SUNY) New Paltz, NY	10/2018
	25. Transport and Mixing in Fluids, SIAM Annual Meeting, Portland, OR	07/2018
	24. James Simons' 80th birthday conference; "Fluids (in dimension at most three), and Complex Manifolds (in dimension at least three) – A Discussion of two "All Time" problems", The Simons Foundation and CUNY Graduate Center, Manhattan, NY	04/2018
	23. Nonlinear and Stochastic PDE and Applications, AMS Meeting #1139, Boston MA	04/2018
	22. 15th Japanese-German International Workshop on Mathematical Fluid Dynamics	01/2018
	21. Regularity and long-time behavior of fluid flows, SIAM APDE, Baltimore MD	12/2017
	20. Frontiers in Turbulence – KRS70 (honoring Katepalli R. Sreenivasan), Denver CO	11/2017
	19. American Physical Society, Division of Fluid Dynamics 70th Meeting, Denver CO	11/2017
	18. Princeton-Tokyo Fluid Mechanics Workshop, Princeton NJ	11/2017
	17. Current trends in kinetic theory, KI-Net, University of Maryland, Princeton NJ	10/2017
	16. Workshop on Conservation Laws and Applications, IMPA, Rio de Janeiro, Brazil https://www.youtube.com/watch?v=Crr7314ILkM&t=1s	08/2017
	15. Equations of Fluid Mechanics: Analysis, MCA 2017, Montreal, Canada	07/2017
	14. Hydrodynamic and Wave Turbulence, AMS Sectional, Hunter College, NY	05/2017
	13. 2017 Shanks Workshop on Mathematical Aspects of Fluid Dynamics, Vanderbilt	04/2017
	12. Fluid flows: from graphene to planet atmosphere, Simons Center, Stony Brook	03/2017
	11. Turbulent Dissipation, Mixing and Predictability, IPAM, UCLA, Los Angeles	01/2017
	10. American Physical Society 69th DFD Meeting, Nov 23 - 25, 2016, Portland, OR	04/2016
	9. Special Session on Equations of Fluid Motion, JMM, Seattle	01/2016
	8. Session B50: Driven and Dissipative Atomic Systems, APS, Baltimore	03/2016
	7. Mathematical Fluid Dynamics and Turbulence, III, AMS Meeting #1107, D.C	03/2015
	6. Institute for Pure & Applied Mathematics (IPAM), Lake Arrowhead Conference	12/2014
	5. American Physical Society 67th DFD Meeting, Nov 23 - 25, 2014, SF, CA	11/2014
	4. Institute for Pure & Applied Mathematics (IPAM), UCLA, Los Angeles, CA	09/2014
	3. 14th CAPRA, University of Southampton, Southampton, England	07/2011
	2. 13th CAPRA, Perimeter Institute for Theoretical Physics, Waterloo, Canada	06/2010
	1. Midwest Relativity Meeting, University of Michigan, Ann Arbor	10/2009
Outreach Talks	4. First and Second year Graduate student seminar, Stony Brook	04/2021
	3. Waters Seminar Lunch Talk, Princeton, New Jersey	11/2019
	2. Research Talks for Undergraduates, Princeton, New Jersey	11/2018
	1. Undergraduate Math Club Colloquium, Princeton, New Jersey	11/2017
University Service	• Faculty advisory committee, Center for Hellenic Studies , Stony Brook University	2024–
	• At-Large Senator, University Senate , Stony Brook University	2024–
Department Service	• Postdoc Hiring Committee , Stony Brook University	2023
	• Hiring bylaws Committee , Stony Brook University	2021–2023
	• Graduate Admissions Committee : Stony Brook University	2020–
	Seminar Organization : Colloquium, Analysis seminar	2020–

Academic Service

- **Reviewer:** Acta, Annals of Mathematics, Memoirs of the AMS, Advances in Mathematics, Transactions of the American Mathematical Society, Journal of the European Mathematical Society, Mathematische Annalen, Comm. on Pure and Applied Mathematics, Comm. in Mathematical Physics, Communications in Mathematical Sciences, Journal of Mathematical Physics, Discrete and Continuous Dynamical Systems, Annals of PDE, Archive for Rational Mechanics and Analysis, Analysis & PDE, SIAM J. Mathematical Analysis, J Nonlinear Sci, Indiana University Math. J., Nonlinearity, J Mathematical Fluid Mech, J Fluid Mech, Physica D, Phys Rev E, J Nonlinear Analysis - A, Nature Comm. Physics, Physical Review X, Physical Review Letters, Proceedings of the Royal Society of London A, J. London Math. Soc., Multiscale Modeling and Simulation, Journal of Physics A, Chaos, Solitons & Fractals, American Mathematical Society's Notices, Proc. Amer. Math. Soc., Nonlinear Analysis, Journal of Functional Analysis, Journal of Geometry and Physics, The Annals of Probability, Vietnam Journal of Mathematics, Mathematische Nachrichten, Zeitschrift fuer Angewandte Mathematik und Physik, J. Functional Analysis, MathSciNet and zbMATH (Zentralblatt MATH)

– Outstanding Reviewer award for Nonlinearity (2020)

Grant: Natural Science Foundation (NSF), European Research Council (ERC), Swiss National Science Foundation (SNSF), Israel Science Foundation (ISF), Icelandic Research Fund (IRF), National Natural Science Foundation of China (NSFC)

• Program Organization:

- Simons Center Program: *Physics and math of turbulence in different media* Fall 2026
Co-organizers: G. Falkovich (Weizmann), V. Rosenhaus (CUNY), V. Vicol (NYU)
website: <https://scgp.stonybrook.edu/archives/45945>
- 3rd Simons Math Summer Workshop: PDE of Classical Physics 07/2025
Co-organizers: J. Anderson (Stony Brook), M. Dafermos (Princeton), J. Luk (Stanford)
website: <https://scgp.stonybrook.edu/archives/43877>
- Simons Center Program: *Singularity and Prediction in Fluids*, Stony Brook, NY 06/2022
Co-organizer: D. Sullivan (CUNY GC & Stony Brook)
website: <http://scgp.stonybrook.edu/archives/32842>

• Workshop Organization:

- Blurring the lines between pure and applied through mixing, Sabhal Mòr Ostaig, 06/2025
Co-organizers: M. Coti Zelati (Imperial), Camilla Nobili (Surrey), K. Widmayer (Zurich)
- BIRS Workshop on *New Trends in Fluids and Collective Behaviors*, Banff, Canada 07/2023
Co-organizers: R. Shvydkoy (UIC), N. Rodriguez (Colorado), E. Tadmor (UMD)
- *Workshop on the Geometry and Analysis of Fluid Flows* in celebration of David Ebin's 80th birthday, Stony Brook University, NY 01/2023
Co-organizers: G. Misiolek (Notre Dame), M. Disconzi (Vanderbilt), S. Preston (CUNY)
- Simons Center Workshop on *Small scale dynamics in fluid motion*, Stony Brook, NY 06/2022
Co-organizers: T. Elgindi (Duke), D. Sullivan (CUNY GC & Stony Brook)
website: <http://scgp.stonybrook.edu/archives/33694>
- Simons Workshop on *Singularities in Fluids and Plasmas*, Princeton, NJ 03/2020

• Special Session Organization:

- AMS SS: *Recent advances in fluids and related models*, JMM, Seattle, WA 01/2022
Co-organizers: Hussain Ibdah(UMD), H.Q. Nguyen (UMD)
- AMS SS: *Analysis of PDE in Fluid Dynamics: Theory and Numerics*, Purdue, IN 04/2020
Co-organizers: M. Jolly (Indiana U.), H.Q. Nguyen (Brown)
- SIAM PDE MS49: *Regularity, Singularity and Turbulence in Fluids*, La Quinta, CA 12/2019
Co-organizers: V. Martinez (Hunter College), H.Q. Nguyen (Brown)

Mini-courses**Scuola Normale Superiore, Pisa, Italy**

Turbulence on the Banks of the Arno
co-instructor: Alexei Mailybaev

April 2025

website: <https://indico.sns.it/event/62>**Mathematisches Forschungsinstitut Oberwolfach**

Oberwolfach Seminar: Long-Time Behavior in Fluids
co-instructors: Peter Constantin, Tarek M. Elgindi, Mihaela Ignatova

May 2024

website: https://www.mfo.de/occasion/2421b/www_view**Imperial College London**

Mathematics of Turbulence
Stability and dynamics in fluid mechanics and kinetic theory Summer School

July 2023

website: <https://sites.google.com/view/icl-stable-chaos/home?authuser=0>**Simons Center for Geometry and Physics, Stony Brook**

Mini-course: "*Boundary and Singularity in Fluid Mechanics*"
co-instructors: Daniel Ginsberg, Sameer Iyer
funded by the National Science Foundation through a CAREER & RTG grant
website: <https://scgp.stonybrook.edu/archives/44203>

01/2025

Mini-course: "*New Trends in Mathematical Fluid Dynamics*"
co-instructors: Sam Punshon-Smith, Francisco Torres de Lizaur
funded by the National Science Foundation through an RTG grant
website: <http://scgp.stonybrook.edu/archives/35785>

04/2022

Mini-course: "*Mathematical Aspects of Turbulence*"
Part of Simons Center program "Renormalization and universality in
Conformal Geometry, Dynamics, Random Processes, and Field Theory".

01/2021

recordings: http://scgp.stonybrook.edu/video/results.php?profile_id=2422Part I: <https://www.youtube.com/watch?v=kWyJQh1Z6rk&t=3s>Part II: <https://www.youtube.com/watch?v=uj97zZaTQ0&t=3s>Part III: <https://www.youtube.com/watch?v=s51QJ- iu01Y&t=2s>Part IV: <https://www.youtube.com/watch?v=ZqK1TUViNuc&t=4809s>**Instituto Nacional de Matemática Pura e Aplicada – IMPA**

Introduction to Stochastic Differential Equations with Applications to Fluid Dynamics
Brazilian summer school short course, co-taught with Simon Thalabard

Winter 2019

course website: <http://fluid.impa.br/SDE2019>

**University
Teaching**

Stony Brook University

MAT 307: Multivariable calculus with Linear Algebra	Fall 2024
MAT 649: Geometric, Topological and Dynamical Methods for Fluid Motion	Spring 2024
MAT 402: PDEs and Fluids (undergraduate REU prep course)	Spring 2024
MAT 203: Calculus III	Fall 2023
MAT 125: Calculus A	Fall 2021, Fall 2023, Spring 2023
MAT 633: Topics in Differential Equations: Mathematics Aspects of Fluid Dynamics	Fall 2021

Princeton University

MAT202, Linear Algebra with Applications, <i>Course Head</i>	Summer 2020
MAT204, Advanced Linear Algebra with Applications, <i>Course Head</i>	Spring 2020
MAT201, Multivariable Calculus, <i>Course Head</i>	Fall 2018, 2020, Spring 2019
MAT203, Advanced Multivariable Calculus	Fall 2020

The Johns Hopkins University

Recipient of the *Professor Joel Dean Award for Excellence in Teaching*, 2016

EN.550.386, Scientific Computing: Differential Equations	Spring 2016
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Mentoring

• **PhD students:**

Daniil Glukhovskiy (Stony Brook University)	2021 –
Jonathan Li (Johns Hopkins University)	2023 –
Woohyu Jeon (Stony Brook University)	2024 –

• **High school advising:**

Michael Retakh (Ward Melville)	2024–
David Vaysman (Bronx High School of Science)	2023–2025
Jenny Zheng (Garden City High School, now at Yale)	2020–2022

• **External member of thesis defense committee:**

Antoine Barlet (IMPA & University Paris Saclay)	2025
Julia Domingues Lemos (IMPA)	2022
Umberto Pappalètera (Scuola Normale Superiore di Pisa)	2022