

Adrian VAN KAN

PERSONAL DATA

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EMPLOYMENT

STARTING AUG 2025 Assistant Professor of Mathematics (Focus on High-Performance Computing)
Department of Mathematics, Texas A&M University

APR 2025 - AUG 2025 Postdoctoral researcher (Part-time)
Department of Applied Mathematics, CU Boulder
Advisor: Jeffrey Weiss

NOV 2021 - NOW Postdoctoral researcher
Funded by a DFG Walter Benjamin fellowship (Projektnummer: 522026592)
and the National Science Foundation (Grants DMS-2009563 and DMS-2308337)
Department of Physics, UC Berkeley
Advisors: Edgar Knobloch (UC Berkeley), late Keith Julien (U Colorado, Boulder)

EDUCATION

OCT 2018 - OCT 2021 PhD, **Department of Physics, ENS Paris**,
Degree awarded by ENS-PSL on 09/09/2021
Advisors: Alexandros Alexakis, Marc-Etienne Brachet (co-advisor)

OCT 2016 - SEP 2018 Master of Science, PHYSICS at **Universität Heidelberg**

OCT 2015 - JUN 2016 Part III (Master of Advanced Studies) MATHEMATICS at DAMTP, **University of Cambridge**

UNDERGRADUATE RESEARCH MENTORING EXPERIENCE

2025 - NOW Smridhi Mahajan (UCB Physics)

2025 - NOW Yijun Lin (UCB Physics)

2024 - NOW Troy Tsubota (UCB Physics), \$6.5k BPURS+ Pi^2 awards

2024 - NOW Maya Ann Basu (UCB Physics, \$750 BPURS Award)

2023 - NOW Dave Li (formerly UC Berkeley, now UW); \$500 APS DFD Travel Award; paper in Phys. Rev. Fluids

2022 - NOW Lichuan Xu (then UCB Physics, now UChicago) \$6k BPURS + Pi^2 awards, paper in Phys. Rev. Fluids

2022 - 2023 Mathi Raja (then UCB Physics, now U. Cambridge), \$500 BPURS Award, paper in Phys. Rev. E

2021 Xander de Wit (then ENS Paris, now U. Eindhoven) publication in J. Fluid Mech.

2020 Basile Poujol (ENS Paris) publication in Phys. Rev. Fluids

TEACHING EXPERIENCE

JUL - AUG 2025 Invited as Lecturer for Studienstiftung/Max Weber Program summer school, Leysin

JAN 2025 Substitute Lecturer for Prof Edgar Knobloch, Theoretical Mechanics, UC Berkeley

SEP 2020 - JAN 2021 Teaching Assistant to Prof Stephan Fauve, Dynamical Systems (M1), ENS

SEP 2020 - OCT 2020 Teaching Assistant to Prof Stephan Fauve, Instabilities (M2), ENS

SEP 2019 - FEB 2020 Teaching Assistant to Prof Stephan Fauve, Dynamical Systems (M1), ENS

OCT 2016 - MAR 2017 Teaching Assistant to Prof Arthur Hebecker, Mechanics, U. Heidelberg

APR 2013 - OCT 2013 Teaching Assistant to Prof Winfried Kohnen, Analysis 2, U. Heidelberg

PUBLICATIONS (PEER-REVIEWED)

22. A. van Kan, A. Alexakis, E. Knobloch: Two-dimensional turbulent condensates without bottom drag (under review, Proc. Roy. Soc. A) [doi:10.48550/arXiv.2504.02978](https://doi.org/10.48550/arXiv.2504.02978)
21. K. Julien, A. van Kan, B. Miquel, E. Knobloch, G. Vasil: Rescaled Equations of Fluid Motion for Well-Conditioned Direct Numerical Simulations of Rapidly Rotating Convection (in revision, J. Comp. Phys.). [doi:10.48550/arXiv.2410.02702](https://doi.org/10.48550/arXiv.2410.02702)
20. A. van Kan, K. Julien, B. Miquel, E. Knobloch (2025): Bridging the Observational-Experimental Gap in Rapidly Rotating Convection, *J. Fluid Mech.*, 1010, A42. [doi:10.1017/jfm.2025.290](https://doi.org/10.1017/jfm.2025.290)
19. D. Li¹, C. Liu, A. van Kan, E. Knobloch (2025): Traveling spatially localized convective structures in an inclined porous medium, *Phys. Rev. Fluids*, 10(3), 034402. [doi:10.1103/PhysRevFluids.10.034402](https://doi.org/10.1103/PhysRevFluids.10.034402)
18. A. van Kan (2024): Invited Review: Phase Transitions in Anisotropic Turbulence, *Chaos*, 34, 122103, Editor's Pick. [doi:10.1063/5.0232179](https://doi.org/10.1063/5.0232179)

17. L. Xu¹, A. van Kan, C. Liu, E. Knobloch (2024): Fluctuation-Induced Transitions in Anisotropic Two-Dimensional Turbulence, *Phys. Rev. Fluids* 9.6 064605, **Editor's Suggestion**. [doi:10.1103/PhysRevFluids.9.064605](https://doi.org/10.1103/PhysRevFluids.9.064605)
16. A. van Kan, B. Favier, K. Julien, E. Knobloch (2024): From a vortex gas to a vortex crystal in instability-driven two-dimensional turbulence. *J. Fluid Mech.*, 984, A41. [doi:10.1017/jfm.2024.162](https://doi.org/10.1017/jfm.2024.162)
15. A. Alexakis, R. Marino, P. Mininni, A. van Kan, R. Foldes, F. Feraco (2024): Large-scale self-organisation in dry turbulent atmospheres, *Science*, 383, 6686, 1005-1009, [doi:10.1126/science.adg8269](https://doi.org/10.1126/science.adg8269)
14. M. Raja¹, A. van Kan, B. Foster, E. Knobloch (2023): Collisions of localized patterns in a non-variational Swift-Hohenberg equation, *Phys. Rev. E* 107, 064214, [doi:10.1103/PhysRevE.107.064214](https://doi.org/10.1103/PhysRevE.107.064214)
13. A. van Kan, F. Pétrélis (2023): $1/f$ noise and anomalous scaling in Lévy noise-driven on-off intermittency. *J. Stat. Mech.*, 013204, [doi:10.1088/1742-5468/acac71](https://doi.org/10.1088/1742-5468/acac71)
12. A. van Kan, B. Favier, K. Julien, E. Knobloch (2022). Spontaneous suppression of inverse energy cascade in instability-driven 2-D turbulence. *J. Fluid Mech.*, 952, R4. [doi:10.1017/jfm.2022.935](https://doi.org/10.1017/jfm.2022.935)
11. X. de Wit¹, A. van Kan, A. Alexakis (2022): Bistability of the large-scale dynamics in quasi-two-dimensional turbulence. *J. Fluid Mech.*, 939, R2. [doi:10.1017/jfm.2022.209](https://doi.org/10.1017/jfm.2022.209)
10. A. van Kan, A. Alexakis, M. Brachet (2022): Geometric microcanonical theory of two-dimensional Truncated Euler flows, *Phil. Trans. R. Soc. A* 380: 20210049. *Phil. Trans. R. Soc. A*. [doi:10.1098/rsta.2021.0049](https://doi.org/10.1098/rsta.2021.0049)
9. A. van Kan, A. Alexakis (2021): Energy cascades in stratified rapidly rotating turbulence within highly elongated domains, *J. Fluid Mech.*, 933, A11. [doi:10.1017/jfm.2021.1083](https://doi.org/10.1017/jfm.2021.1083)
8. A. van Kan, A. Alexakis, M. Brachet (2021): Lévy on-off intermittency, *Phys. Rev. E*, 103(5), 052115. [doi:10.1103/PhysRevE.103.052115](https://doi.org/10.1103/PhysRevE.103.052115)
7. A. van Kan, A. Alexakis, M. Brachet (2021): Intermittency of three-dimensional perturbations in a point-vortex model, *Phys. Rev. E*, 103(5), 053102. [doi:10.1103/PhysRevE.103.053102](https://doi.org/10.1103/PhysRevE.103.053102)
6. B. Poujol¹, A. van Kan, A. Alexakis (2020): Role of the forcing dimensionality in thin-layer turbulent energy cascades, *Phys. Rev. Fluids* 5, 064610. [doi:10.1103/PhysRevFluids.5.064610](https://doi.org/10.1103/PhysRevFluids.5.064610)
5. A. van Kan, A. Alexakis (2020): Critical transition in fast-rotating turbulence within highly elongated domains, *J. Fluid Mech.*, 899, A33. [doi:10.1017/jfm.2020.443](https://doi.org/10.1017/jfm.2020.443)
4. A. van Kan, T. Nemoto, A. Alexakis (2019): Rare transitions to thin-layer turbulent condensates, *J. Fluid Mech.*, 878, 356-369. [doi:10.1017/jfm.2019.572](https://doi.org/10.1017/jfm.2019.572)
3. A. van Kan, A. Alexakis (2018): Condensates in thin-layer turbulence, *J. Fluid Mech.*, 864, 490-518. [doi:10.1017/jfm.2019.29](https://doi.org/10.1017/jfm.2019.29)
2. A. van Kan, J. Jegminat, J. Donges, J. Kurths (2016): Constrained basin stability for studying transient phenomena in dynamical systems, *Phys. Rev. E* 93, 042205, [doi:10.1103/PhysRevE.93.042205](https://doi.org/10.1103/PhysRevE.93.042205)
1. S. Wang, R. Toumi, A. Czaja, A. van Kan (2015): An analytic model of tropical cyclone wind profiles, *Q. J. R. Met. Soc.*, [doi:10.1002/qj.2586](https://doi.org/10.1002/qj.2586)

SCHOLARSHIPS, AWARDS AND FELLOWSHIPS

JAN 2025	Institute of Pure and Applied Mathematics Travel Support	(\$2k)
NOV 2024	APS DFD Annual Meeting Travel Award	(\$500)
SEP 2024	Honorarium as Invited Speaker at Academia Sinica, Taipei	(NTD3k)
AUG 2024	ICTAM 2024 Thomas J. R. Hughes Fellowship & Support Grant	(\$2.5k)
JUL 2024	Potsdam Institute for Climate Impact Research Travel Support	(250€)
JUN-JUL 2024	Woods Hole Oceanographic Institution GFD Summer Program Staff Member	(\$1.6k)
JUN 2024	UC President's Lindau Nobel Laureate Meeting Fellowship	(\$8k)
MAR 2023	Financial support Isaac Newton Institute Workshop ADIW02 as Invited Speaker	(\$630)
APR 2023 - MAR 2025	DFG Walter Benjamin fellowship	(104k€)
JUL 2023	France-Berkeley Fund 2023 (with Edgar Knobloch and Alexandros Alexakis)	(\$12k)
APR 2023	Fellow of German Scholars Organization Leadership Academy	(\$5k)
MAR 2023	Mention spéciale du Prix de Thèse de l'Institut Océanographique de Monaco	(\$5k)
MAR 2023	Berkeley Postdoc Association Professional development award	(\$1.25k)
MAR 2023	American Physical Society Dissertation Award in Statistical & Nonlinear Physics	(\$3.5k)
SEP 2022	German Academic International Network conference stipend	(700€)
AUG-SEP 2022	SIAM Early Career Travel Award for SIAM NWCS22 conference	(\$1.3k)
NOV 2018 - OCT 2021	PhD scholar Ecole Doctorale Physique en Ile de France	(54k€)
NOV 2019 - OCT 2021	Studienstiftung PhD scholar	(2k€)
SEP 2017 - SEP 2018	DAAD annual fellowship & additional stipend by Studienstiftung	(12k€)
AUG - SEP 2016	DAAD & MOST Taiwan Summer Institute Programme scholarship	(3k€)

¹Student supervised or co-supervised by A. van Kan.

OCT 2015 - JUN 2016	Kurt Hahn Fellowship by Kurt Hahn Trust, Cambridge	(£3k)
JUN - AUG 2014	Kupcine-Getz International Science School scholarship	(1k€)
OCT 2013 - JUN 2014	Erasmus scholarship and Studienstiftung international stipend	(6k€)
FEB 2012 - OCT 2018	Bachelor's and Master's Scholar of Studienstiftung	(25k€)

CONFERENCES AND SCHOOLS (LAST 5 YEARS)

MAY 2025	SIAM DS25, Denver, USA, Organizer of Minisymposium, Talk (25 min)
JAN 2025	UCLA IPAM Workshop on Rotating Turbulence, Invited talk
NOV 2024	APS Div. Fluid Dyn. 77th Annual Meeting, Salt Lake City, USA (50min <i>Interact</i> Session)
AUG 2024	ICTAM 2024 Meeting, Daegu, Korea, 2×Invited Talk (30 min) + Contributed Talk (20 min)
MAR 2024	Isaac Newton Institute Workshop, Cambridge, UK, Invited Talk (50 min)
JAN 2024	US Dynamics Days, UC Davis, USA, Contributed Talk (15 min)
MAY 2023	SIAM DS23 Meeting, Portland, USA, Talk in Minisymposium (20 min)
MAR 2023	APS March Meeting, Las Vegas, GSNP Invited Talk – Dissertation Award (35 min)
MAR 2023	APS March Meeting, Las Vegas, Contributed Talk (15 mins)
NOV 2022	APS Division of Fluid Dynamics 75th Annual Meeting, Indianapolis (15 min) Appointed Session Chair: <i>Turbulence Theory</i>
SEP 2022	European Fluid Mechanics Conference 2022, Athens, Contributed Talk (15 min)
AUG - SEP 2022	SIAM Conference on Nonlinear Waves and Coherent Structures, Bremen, Talk (15 min) Appointed Session Chair: <i>Geophysical Systems</i>
JUL 2022	Hydrodynamics Across Scales School, Boulder (Colorado), USA, Poster presentation
MAY 2022	European Geosciences Union, Annual Meeting, Vienna, Austria, Contributed Talk (7 min)
NOV 2021	APS Division of Fluid Dynamics Meeting, Arizona, USA

TALKS (LAST 5 YEARS)

- Invited talk at Selection Symposium for NRW Rückkehrprogramm, May 2025
- Invited Talk at Geophysics & Tectonics Seminar, UCLA, April 2025 (1h)
- Invited Talk at Applied Mathematics Seminar, UC Santa Cruz, April 2025 (1h)
- Physics Colloquium on Physics of Climate (1h), CU Boulder, Feb 2025 (part of interview for AP position)
- Berkeley Atmospheric Science Seminar (1h), UC Berkeley, Feb 2025 (invited by Profs. Zeppetello, D'Odorico)
- Research talk and lecture at Universität Münster (50 min), Feb 2025 (part of interview for W3 position)
- Texas A&M University Mathematics Colloquium (1h), Jan 2025 (part of interview for AP position)
- Talk at Plasma Physics Group Seminar, UC Berkeley (1h), Nov 2024 (host: Prof. Wurtele)
- Talk at Max Planck Institute for Mathematics in the Sciences (1h), Sep 2024 (hosts: F. Otto, L. Székelyhidi)
- Talk at Academia Sinica, Taipei, Taiwan (1h), Sep 2024 (hosted by Hong-Yan Shih)
- Talk at WHOI Geophysical Fluid Dynamics Summer Programme (1h), Jul 2024
- Seminar on *Tipping Points in Turbulence* at PIK Potsdam (0.5h), Jul 2024 (invited by Dr. Jonathan Donges)
- Seminar at ISTA (45 min), Mar 2024 (invited as part of interview for AP position)
- UCSC Applied Mathematics Seminar (1h), Jan 2024 (invited by Prof. Pascale Garaud)
- Nonlinear Physics Group Seminar at Ecole normale supérieure (1h), Nov 2023
- LMFA Seminar (hosted by Dr. Benjamin Miquel), Ecole Centrale de Lyon (1h), Nov 2023
- Seminar at DAMTP, U. Cambridge (45 min), Mar 2023 (invited as part of interview for Lecturer position)
- Seminar at School of Mathematics, U. Edinburgh (invited as part of interview for tenure-track position)
- CeNoS Sonderkolloquium, Univ. Münster, *Lévy on-off intermittency* (1h), Aug 2022
- Group seminar Prof. Esposito, U. Luxemburg, *Critical transitions in anisotropic turbulence*, (1h) May 2022
- GAFD seminar, U. Colorado at Boulder, *Critical transitions in anisotropic turbulence* (1h), Apr 2022
- Nonlinear analysis & PDE seminar, U. Sofia Antipolis, Nice, *Lévy on-off intermittecy* (1h), Feb 2021

SERVICE, OUTREACH AND LEADERSHIP

2024 - 2025	Vice President of UC Berkeley Postdoc Teaching Opportunities Program (PTOP)
2024	Organizer of a minisymposium on <i>Geophysical Fluid Dynamics</i> at SIAM DS25, Denver
JAN 2024 - NOW	Associate Editor for <i>Chaos: An Interdisciplinary Journal of Nonlinear Science</i>
2023	Fellow at German Scholars Organization's 7th Leadership Academy
2023	Selected as participant of UC Berkeley Scientific Leadership and Management Course
2022-2023	Compass Mentor for two freshman students: Regular discussions on courses, career

2022 **Supervision of Undergraduate Research:** Mathi Raja, Lichuan Xu, Zhiwei (Dave) Li, Maya Ann Basu, Troy Tsubota, Smridhi Mahajan, Yijun Lin (led to three published papers)

2022 - now **Reviewer** for *J. Fluid Mech.* ($\times 8$), *Phys. Rev. Fluids* ($\times 1$) *MDPI Atmosphere* ($\times 1$), *MDPI Processes* ($\times 1$) and the *Eur. Phys. J. Plus* ($\times 2$)