



Vikas S. Krishnamurthy

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EMPLOYMENT

Department of Mathematics, IIT Hyderabad Assistant Professor	Hyderabad, India 02/2022 – present
Faculty of Mathematics, University of Vienna University Assistant Postdoc • Host: Adrian Constantin Postdoctoral Fellow	Vienna, Austria 09/2019 – 01/2022 08/2018 – 08/2019
Erwin Schrödinger International Institute for Mathematics and Physics Junior Research Fellow • Host: Adrian Constantin	Vienna, Austria 04/2018 – 07/2018
Department of Physics, Federal University of Pernambuco Postdoctoral Fellow [Science Without Borders] • Host: Giovani L. Vasconcelos	Recife, Brasil 03/2017 – 01/2018

EDUCATION

Department of Mathematics, Imperial College London Ph.D. in Mathematics • Advisor: Darren G. Crowdy	London, UK 10/2012 – 02/2017
Department of Engineering Science & Mechanics, Virginia Tech Graduate studies • Advisors: (The late) Hassan Aref and Mark A. Stremler	Blacksburg, USA 08/2010 – 09/2012
Department of Physics, University of Mysore Five Year Integrated M.Sc. • Masters thesis advisor: N. D. Hari Dass	Mysuru, India 09/2005 – 06/2010

AWARDS

Fellowships and Scholarships

(Declined) EuroTechPostdoc Programme Marie-Curie Fellow Host: Morten Brøns, DTU • Co-host: François Gallaire, EPFL	Denmark & Switzerland 2019 – 2021
(Declined) Postdoctoral Visiting Fellowship International Center for Theoretical Sciences	Bengaluru, India 2018 – 2020
Department of Mathematics Studentship • Imperial College London Full support including all fees covered and travel grants for the duration of the Ph.D.	London, UK 02/2016 – 07/2016
Rectors Scholarship for Ph.D. Students • Imperial College London Full support including all fees covered	London, UK 10/2012 – 01/2016
Pratt Presidential Graduate Fellowship • Virginia Tech Supplementary fellowship for graduate students	Blacksburg, USA Fall 2010 & Spring 2011
Summer Student Research Fellowship For Masters thesis research at Poornaprajna Institute for Scientific Research	Bengaluru, India 05–06/2009 & 12/09 – 01/10
University of Mysore Studentship Full tuition-fee waiver and a monthly stipend	Mysuru, India 08/2005 – 07/2010

Conferences and Visits

Isaac Newton Institute partial support for “Complex analysis toolbox workshop”	Cambridge, UK, 09/2019
IUTAM partial support for “Vortex dynamics in science, nature and technology”	Scripps IO, USA, 06/2019
NSF-CBMS travel grant for “NSF-CBMS conference on multiply-connected domains”	UC Irvine, USA, 06/2018
IUTAM partial support for “Dynamics and topology of vorticity and vortices”	Marseille, France, 06/2017

SERVICE

Organiser

National Mathematics Day/Ramanujan Day 2022	
Co-organiser on behalf of the Department of Mathematics, IIT Hyderabad	IIT Hyderabad
Math quiz and prizes for high school students, invited talks, ~100 participants	22/12/2022
Applied mathematics symposium: Instability and flow transition	
Co-organiser with Satyajit Pramanik (Indian Institute of Technology Guwahati)	Online
10 speakers, including a plenary talk, ~40 participants	11/11/2022
1 st Early Career Applied Mathematics Meeting	
Co-organiser with Elena Luca (University College London)	Online
6 speakers (PhDs & Postdocs), a plenary talk, ~60 participants	18/03/2021

Referee

Applicable Analysis	Mathematical Reviews
Communications on Pure & Applied Analysis	Philosophical Transactions of the Royal Society A
IMA Journal of Applied Mathematics	Physica D: Nonlinear Phenomena
Journal of Engineering Mathematics	Physical Review Fluids
Journal of Fluid Mechanics	Proceedings of the Royal Society A
Journal of Mathematical Physics	Regular and Chaotic Dynamics
Journal of Physics A: Mathematical and Theoretical	

TEACHING EXPERIENCE

IIT Hyderabad

<i>First year undergraduates</i>	Elementary Linear Algebra (2022)
<i>Second year undergraduates</i>	Complex Variables (2022)
<i>Masters and Ph.D.</i>	Partial Differential Equations (2022)

University of Vienna

<i>First year undergraduates</i>	Introduction to Analysis (2020), Analysis (2021), Higher Analysis (2021)
<i>Second year undergraduates</i>	Basic Probability and Statistics (2020)
<i>Duties</i>	Teach and handle sections of exercise classes that are stand-alone courses.

Imperial College London

<i>First year undergraduates</i>	Mathematical methods-1, mechanics, mathematics and physics for chemists.
<i>Second year undergraduates</i>	Real analysis, complex analysis, nonlinear waves, multivariable calculus.
<i>Duties</i>	Problem solving sessions, grading, invigilation.

Virginia Tech

<i>First year undergraduates</i>	Dynamics (Fall 2010, 2011 & Summer 2011)
<i>Advanced undergraduates</i>	Intermediate dynamics
<i>Duties</i>	Problem solving sessions, preparing solution manuals, grading, invigilation.

INVITED SEMINARS & CONFERENCE TALKS

Stationary hybrid equilibria of Stuart vortices and point vortices

02/2021	(Seminar) The 6th KTGU Mathematics Workshop for Young Researchers	Online
07/2020	(Mini-Symposium Talk) AN20: 2 nd Joint SIAM/CAIMS annual meeting	Online
11/2019	(Talk) APS-DFD 2019: 72 nd annual meeting	Seattle, USA
09/2019	(Talk) Isaac Newton Institute workshop: Complex analysis toolbox	Cambridge, UK
06/2019	(Talk) IUTAM symposium: Vortex dynamics in science, nature and technology	Scripps IO, USA
05/2019	(Seminar) Mathematics group seminar	ICTS, India

Theory and applications of analytic functions on multiply connected domains

10/2018	(Seminar) Department of mathematics colloquium	U Vienna, Austria
06/2018	(Poster) NSF-CBMS conference on multiply-connected domains	UC Irvine, USA
03/2018	(Seminar) Department of physics seminar	TIFR, India
03/2018	(Seminar) Department of mathematics seminar	IISc, India
02/2018	(Seminar) Mathematics group seminar	ICTS, India

Theoretical models for compressible vortex streets

03/2018	(Seminar) Department of aerospace engineering seminar	IISc, India
01/2018	(Seminar) Institute for Pure and Applied Mathematics seminar	Rio de Janeiro, Brasil
06/2017	(Talk) IUTAM symposium: Dynamics and topology of vorticity & vortices	Marseille, France
03/2017	(Seminar) Center for applicable mathematics seminar	TIFR-CAM, India
02/2017	(Seminar) Theoretical physics group seminar	IMSc, India
02/2017	(Seminar) Fluid dynamics and turbulence group seminar	ICTS, India
02/2017	(Seminar) Department of mathematics seminar	IISc, India
02/2017	(Seminar) Engineering mechanics unit colloquium	JNCASR, India
02/2017	(Seminar) Department of mathematics seminar	IIT-M, India

Hollow vortices in compressible flows

02/2018	(Unattended) IUTAM symposium: Moving boundary problems in mechanics	Christchurch, NZ
08/2016	(Poster) ICTAM 2016: 24 th international congress	Montreal, Canada
07/2016	(Poster) ERCOFTAC 2016: Osborne Reynolds Day	U Manchester, UK
04/2016	(Talk) British applied mathematics colloquium 2016	Oxford U, UK
02/2016	(Seminar) Center for interdisciplinary sciences seminar	TIFR-TCIS, India
01/2016	(Seminar) Department of mathematics seminar	Kyoto U, Japan
11/2015	(Talk) APS-DFD 2015: 68 th annual meeting	Boston, USA
11/2015	(Talk) Fluids theme day of the SIAM student chapter	Imperial College, UK
11/2015	(Talk) ACCA student chapter meeting	Imperial College, UK
07/2014	(Talk) 1 st Early career southeast mathematical physics seminar	U Kent, UK
04/2014	(Talk) British applied mathematics colloquium 2014	Cardiff U, UK

Evolving geometry of a vortex triangle

07/2019	(Mini-Symposium Talk) ICIAM 2019: 9 th international congress	Valencia, Spain
08/2011	(Talk) APS-DFD 2011: 64 th annual meeting	Baltimore, USA
07/2011	(Talk) Fall fluids symposium 2011	Virginia Tech, USA

PUBLICATIONS

Journal Publications

- [18] T. Sakajo and **V. S. Krishnamurthy**. “Quantized point vortex equilibria in a one-way interaction model with a Liouville-type background vorticity on a curved torus”. *J. Math. Phys.* 63 (2022), 063101. doi: [10.1063/5.0062659](https://doi.org/10.1063/5.0062659).
- [17] **V. S. Krishnamurthy**. “Liouville links and chains on the plane and associated stationary point vortex equilibria”. *Commun. Pure Appl. Anal.* 21 (2022), 2383. doi: [10.3934/cpaa.2022076](https://doi.org/10.3934/cpaa.2022076).
- [16] A. Constantin, D. G. Crowdy, **V. S. Krishnamurthy**, and M. H. Wheeler. “Stuart-type polar vortices on a rotating sphere”. *Discrete Contin. Dyn. Syst. A* 41 (2021), 201–215. doi: [10.3934/dcds.2020263](https://doi.org/10.3934/dcds.2020263).
- [15] D. G. Crowdy, R. B. Nelson, and **V. S. Krishnamurthy**. “‘H-states’: exact solutions for a rotating hollow vortex”. *J. Fluid Mech.* 913 (2021), R5. doi: [10.1017/jfm.2021.55](https://doi.org/10.1017/jfm.2021.55).
- [14] R. B. Nelson, **V. S. Krishnamurthy**, and D. G. Crowdy. “The corotating hollow vortex pair: steady merger and break-up via a topological singularity”. *J. Fluid Mech.* 907 (2021), A10. doi: [10.1017/jfm.2020.803](https://doi.org/10.1017/jfm.2020.803).
- [13] **V. S. Krishnamurthy**, M. H. Wheeler, D. G. Crowdy, and A. Constantin. “Liouville chains: new hybrid vortex equilibria of the two-dimensional Euler equation”. *J. Fluid Mech.* 921 (2021), A1. doi: [10.1017/jfm.2021.285](https://doi.org/10.1017/jfm.2021.285).
- [12] **V. S. Krishnamurthy**, M. H. Wheeler, D. G. Crowdy, and A. Constantin. “A transformation between stationary point vortex equilibria”. *Proc. R. Soc. A* 476 (2020), 20200310. doi: [10.1098/rspa.2020.0310](https://doi.org/10.1098/rspa.2020.0310).
- [11] A. Constantin and **V. S. Krishnamurthy**. “Stuart-type vortices on a rotating sphere”. *J. Fluid Mech.* 865 (2019), 1072–1084. doi: [10.1017/jfm.2019.109](https://doi.org/10.1017/jfm.2019.109).

- [10] **V. S. Krishnamurthy**. “The vorticity equation on a rotating sphere and the shallow fluid approximation”. *Discrete Contin. Dyn. Syst. A* 39 (2019), 6261–6276. doi: [10.3934/dcds.2019273](https://doi.org/10.3934/dcds.2019273).
- [9] **V. S. Krishnamurthy**, M. H. Wheeler, D. G. Crowdy, and A. Constantin. “Steady point vortex pair in a field of Stuart-type vorticity”. *J. Fluid Mech.* 874 (2019), R1. doi: [10.1017/jfm.2019.502](https://doi.org/10.1017/jfm.2019.502).
- [8] D. G. Crowdy and **V. S. Krishnamurthy**. “The effect of core size on the speed of compressible hollow vortex streets”. *J. Fluid Mech.* 836 (2018), 797–827. doi: [10.1017/jfm.2017.821](https://doi.org/10.1017/jfm.2017.821).
- [7] **V. S. Krishnamurthy**, H. Aref, and M. A. Stremler. “Evolving geometry of a vortex triangle”. *Phys. Rev. Fluids* 3 (2018), 024702. doi: [10.1103/PhysRevFluids.3.024702](https://doi.org/10.1103/PhysRevFluids.3.024702).
- [6] **V. S. Krishnamurthy** and M. A. Stremler. “Finite-time Collapse of Three Point Vortices in the Plane”. *Regul. Chaotic Dyn.* 23 (2018), 530–550. doi: [10.1134/S1560354718050040](https://doi.org/10.1134/S1560354718050040).
- [5] D. G. Crowdy and **V. S. Krishnamurthy**. “Speed of a von Kármán point vortex street in a weakly compressible fluid”. *Phys. Rev. Fluids* 2 (2017), 114701. doi: [10.1103/PhysRevFluids.2.114701](https://doi.org/10.1103/PhysRevFluids.2.114701).

Conference Proceedings

- [4] V. S. Krishnamurthy and D. G. Crowdy. “Analytical solutions for weakly compressible von Karman vortex streets”. *Contributions to the Foundations of Multidisciplinary Research in Mechanics*. Vol. 2. 2016, 1562–63. URL: http://iutam.org/publications/ictam-proceedings/ictam_2016.
- [3] S. G. Llewellyn Smith, D. Freilich, V. S. Krishnamurthy, and D. G. Crowdy. “Motion of a compressible vortex pair”. *Contributions to the Foundations of Multidisciplinary Research in Mechanics*. Vol. 2. 2016, 1532–33. URL: http://iutam.org/publications/ictam-proceedings/ictam_2016.
- [2] P. Beelen, M. Brøns, V. S. Krishnamurthy, and M. A. Stremler. “Recent Progress in the Relative Equilibria of Point Vortices—In Memoriam Hassan Aref”. Vol. 7. 2013, 3–12. doi: [10.1016/j.piutam.2013.03.002](https://doi.org/10.1016/j.piutam.2013.03.002). URL: <http://linkinghub.elsevier.com/retrieve/pii/S2210983813000266>.

Ph. D. Thesis

- [1] V. S. Krishnamurthy. “Theoretical models for compressible vortex dynamics”. PhD thesis. Imperial College London, 2017. doi: <https://doi.org/10.25560/47963>.