

ABHIMANYU PALLAVI SUDHIR

MATHEMATICS UNDERGRADUATE | IMPERIAL COLLEGE LONDON

OBJECTIVE

To learn and understand mathematics, including its sub-fields like physics, and apply these skills in my mathematical research.

SKILLS

original thinking,
conscientiousness,
scientific communication,
self-learning and working with
minimal supervision

PROFILES

Stack Exchange

physics.stackexchange.com/u/23119

math.stackexchange.com/u/78451

Github

github.com/abhimanyupallavisudhir

PERSONAL DETAILS

Personal website

abhimanyu.io

Email

AP6218@imperial.ac.uk

LinkedIn

linkedin.com/in/abhimanyu-pallavi-sudhir

RESEARCH

Much of my research has focused on geometric algebra, specifically its applications in linear algebra in defining a generalised determinant for non-square transformations, on which I have written several papers in reputable journals.

More recently, I've been working in the field of fractional calculus.

(**full publication list available on p. 3**)

SELECTED AWARDS

CONFERENCES AND SCIENCE FAIRS

- **Intel ISEF 2015** – AMS Karl Menger Award for Mathematics for determinant-like function project
- **ICMS 2014** – “Best Paper Award” at the International Conference on Mathematical Sciences
- **IRIS National Science Fair 2014** – Gold, Top 3 Award
- **IRIS National Science Fair 2013** – Silver, Special Physics Prize

OLYMPIADS AND COMPETITIONS

- **IIT Math Olympiad 2017** – 6th place nationally in India
- **Regional Mathematical Olympiad 2016** – Certificate of Merit, qualified for Indian National Mathematical Olympiad (2017)

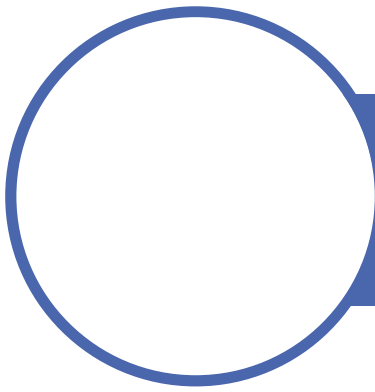
Full list: abhimanyu.io/education

PROJECTS

PHYSICSOVERFLOW

I am co-founder and an elected moderator on PhysicsOverflow, a platform for physics discussion and open peer review. We attract 3000 unique visitors and 20-50,000 page views a month, and have received contributions from several noted physicists, including a Nobel Laureate.

PhysicsOverflow.ORG | en.wikipedia.org/wiki/PhysicsOverflow



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THE WINDING NUMBER

I created and currently make content for The Winding Number, an online resource for undergraduate-level mathematics and physics hosted at blogger. See TheWindingNumber.blogspot.com.

TEACHING

I taught several classes for a module on relativity to my high-school physics class (without any compromise on the content and insights), and lectured my high school Theory of Knowledge class on the philosophy of mathematics and logical positivism.

LEAN

Lean is a functional programming language developed by Microsoft Research that acts as a mathematical proof checker. I contributed proofs of lemmas regarding [irrational numbers](#) to the project's mathematics library on Github.

EDUCATION

MSCI • 2022 (CURRENT) • IMPERIAL COLLEGE LONDON

COURSE: G103 – Mathematics MSci

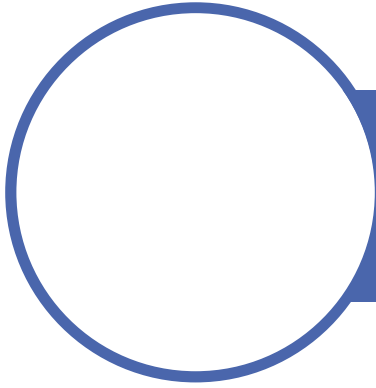
MODULES: (to be added)

IB DIPLOMA • 2018 • DHIRUBHAI AMBANI INTERNATIONAL SCH

SCORE: 44/45 points incl. 3/3 bonus, Further Mathematics HL: 7/7 points

OTHER MODULES AND SELECTED BOOKS BY YEAR READ

Schutz, *General Relativity* (2018–present); *Princeton Lectures in Fourier Analysis* (2018–present); *Inside Interesting Integrals* (2018); Audited MITx 18.03L – *Laplace Transform* (2017); Franzen, *Godel's Theorem* (2016); Gelfand & Fomin, *Calculus of Variations* (2016); Feynman *Lectures I* (2015); Fleisch, *Vectors & Tensors* (2014); *Schaum's Outlines of Linear Algebra* (2013); Denker's av8n, *Introduction to Clifford Algebra* (2012); Jewett & Serway, *Physics for Scientists and Engineers* (2012); McQuarrie, *Mathematical Methods for Scientists and Engineers* (2011); Strogatz, *Calculus of Friendship* (2011); Lang, *Calculus* (2010-11); Abott, *Understand Calculus* (2010)



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PUBLICATION LIST

FRACTIONAL CALCULUS

Abhimanyu Pallavi Sudhir, "The generalised Cauchy derivative as a principal value of the Grünwald-Letnikov fractional derivative for divergent expansions," (2018) [arXiv:1809.08051], arxiv.org/abs/1809.08051

MATRIX THEORY AND LINEAR ALGEBRA

Abhimanyu Pallavi Sudhir, "On the Determinant-like function and the Vector Determinant," *Advances in Applied Clifford Algebras*, (2014) 24-3: 805-807, link.springer.com/article/10.1007/s00006-014-0455-3

Abhimanyu Pallavi Sudhir, "On the Properties of the Determinant-like function" (presented at *International Conferences on Mathematical Sciences*, Chennai, July 17-19, 2014).

Abhimanyu Pallavi Sudhir, "Defining the Determinant-like function for m by n matrices using the exterior algebra," *Advances in Applied Clifford Algebras* (2013) 23-4: 787-792, link.springer.com/article/10.1007/s00006-013-0416-2

Abhimanyu Pallavi Sudhir, "The Representation of Matrices in unit vector notation," *Journal of Mathematics Research* (2012) 4-4: 86-91, dx.doi.org/10.5539/jmr.v4n4p86

MISCELLANEOUS

Abhimanyu Pallavi Sudhir and Rahel Knoepfel, "PhysicsOverflow: A postgraduate-level physics Q&A site and open peer review system," *Asia-Pacific Physics Newsletter* (2015) 4-1: 53-55, dx.doi.org/10.1142/S2251158X15000193