

Shuddhodan Kadattur Vasudevan

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Current position

Oct '22- *Carmin fellow* at Institut des Hautes Études Scientifiques, Bures-Sur-Yvette

Earlier Positions

Aug'19-'22 *Golomb visiting assistant professor* at Department of Mathematics, Purdue University

May-July '19 *Postdoctoral fellow* at Einstein Institute of Mathematics, Jerusalem
Mentor: Prof. Yakov Varshavsky

Apr '18-'19 *Wissenschaftliche Mitarbeiter* at Freie Universität Berlin, Berlin
Mentor: Prof. Hélène Esnault

Areas of specialization

Algebraic Geometry • Arithmetic Geometry

Education

2018 PhD. in Mathematics, Tata Institute of Fundamental Research, Mumbai
Thesis Title: *Self maps of varieties over finite fields*¹
Thesis Advisor: Prof. Vasudevan Srinivas

¹Was awarded the TAA-Harish Chandra Memorial best thesis award of the year

2014 MSc. in Mathematics, Tata Institute of Fundamental Research, Mumbai
2012 B.TECH in Engineering Physics, Indian Institute of Technology Madras, Chennai

Publications and Preprints

2023 (with Ankit Rai) “Perverse filtrations via Brylinski-Radon transformations”, arXiv:2309.13973

2023 (with Deepam Patel) “The Brylinski-Radon transformation in characteristic $p > 0$ ”, arXiv 2307.04156 (Submitted)

2022 “The (non-uniform) Hrushovski-Lang-Weil Estimates”, **Advances in Mathematics**, 410, part B, 108753, 59 pp(*)

2022 (with Yakov Varshavsky) “The Hrushovski-Lang-Weil Estimates”, **Algebr. Geom.**, 9, No. 6, 651–687(*)

The articles (*) were presented in the November 2022 session of the **Séminaire Bourbaki** titled “Sur un théorème de Lang–Weil tordu”, d’après Ehud Hrushovski, Kadattur V. Shuddhodan et Yakov Varshavsky

2021 “Algebraic entropy for smooth projective varieties”, **Math Res. Lett.**, 29, No. 3, 851–869.

2019 “Constraints on the cohomological correspondence associated to a self map”, **Compositio Mathematica**, 155(6), 1047-1056.

2013 (with Udaysinh T. Bhosale and Arul Lakshminarayan), “Using Partial Transpose and Realignment to generate Local Unitary Invariants”, **Phys. Rev. A** 87 052311.

2011 (with Ramkarthik Seshadri and Arul Lakshminarayan), “Entanglement optimizing mixtures of two-qubit states”, **J. Phys. A: Math. Theor.** 44 345301.

Grants, honors & awards

2018 TAA-Harish Chandra Memorial award (Best thesis award) for the year 2017-18

2013-18 Shyama Prasad Mukherjee Fellowship, CSIR, Govt. of India

2009-11 National Initiative for Undergraduate Science Fellowship, HBCSE-TIFR

2006-08 Kishore Vaigyanik Protsahana Yojana (KVPY) Scholarship, Govt. of India

Academic visits

- June, '19 Mathematical Institute, Oxford, UK.
- June, '18 Mathematisches Institut, Ludwig Maximilians Universität, Munich, Germany
- Dec., '17 Department of Mathematical Sciences, IISER Mohali, India
- June, '14 Quantum Geometry of Moduli Spaces (QGM), Aarhus University, Denmark

Seminar and Conference talks

- Sep, '23 Séminaire de Géométrie Arithmétique de l'IHES
- Sep, '23 Number Theory and Representation Theory seminar, University of Maryland
- Sep, '23 Algebraic Geometry Seminar, UIUC
- Aug, '23 Arithmetic and Algebraic Geometry Seminar, Washington University in St. Louis
- June, '23 Arithmetic and Algebraic Geometry Seminar, University of Amsterdam
- Apr, '23 Arithmetic and Algebraic Geometry Seminar, HRI, Allahabad
- Apr, '23 Algebra Seminar, IU Bloomington
- Mar, '23 Conference in honor of V. Srinivas's 65th Birthday, TIFR, Mumbai
- Jan, '23 Séminaire de Mathématique, IHES
- Oct, '22 CohoSing seminar, Orsay
- Apr, '22 AMS Sectional Meeting, Purdue University
- Jan, '22 Algebra Seminar, IU Bloomington
- Sep, '21 Arithmetic geometry seminar, SUNY Binghamton
- June, '21 Workshop on the Standard Conjectures, (Weil's) Riemann Hypothesis, and Relations to Dynamical Systems, Oslo
- June, '21 Recent Developments in Algebraic Geometry, Arithmetic and Dynamics, Singapore
- Dec, '19 Algebraic Geometry seminar, University of Chicago
- Aug, '19 Algebraic Geometry seminar, Purdue University
- June, '19 Oxford Logic seminar
- May, '19 Number Theory seminar, HUJI, Jerusalem
- Apr, '19 Algebraic Geometry seminar, IIT Bombay
- Apr, '19 Algebraic Geometry seminar, TIFR Mumbai
- Apr, '19 Geometry seminar, NISER Bhubaneswar
- Mar, '19 Algebra seminar, IIT Madras
- Jan, '19 Arithmetic Geometry, Guest seminar, FU Berlin
- June, '18 Arithmetic and algebraic geometry seminar, LMU Munich
- May, '18 Arithmetic Geometry, Guest seminar, FU Berlin
- Dec, '17 Mathematics Departmental Seminar, IISER Mohali

Teaching Experience

Summer '22	Differential Equations and Partial Differential Equations, Purdue University
Spring '22	Linear Algebra and Applications, Purdue University
Fall '21	Linear Algebra and Applications, Purdue University
Summer '21	Probability and Statistics, Purdue University
Spring '21	Linear Algebra and Applications, Purdue University
Fall '20	Differential Equations and Applications, Purdue University
Summer '20	Probability and Statistics, Purdue University
Spring '20	Differential Equations and Applications, Purdue University
Fall '19	Differential Equations and Applications, Purdue University

Organisational experience

AT PURDUE UNIVERISTY

2022	AMS Special session on Algebraic Geometry (with Donu Arapura and Deepam Patel)
Fall 2020	Algebraic and Arithmetic Geometry Seminar
Spring 2020	Mixed Hodge Modules and Applications
Fall 2019	Prismatic Cohomology (after Bhatt-Scholze)

AT FU BERLIN

Spring 2018	(with Marcin Lara and Tohru Kohrita) Diophantine problems and p -adic period mappings (after Lawrence-Venkatesh)
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AT TIFR, MUMBAI

2016-2017	Weil II Seminar, organized the seminar and delivered 22 lectures
2015-2016	Intersection Theory seminar
2014	Étale cohomology, organized the seminar and delivered 18 lectures
2014	(with Rakesh Pawar) Abelian varieties seminar
2013	(with Arideep Saha and Lovy Singhal) Morse theory seminar

Service to the profession

2018-19	In the doctoral thesis committee of Marco D'Addezio and Tanya Kaushal Srivastava at FU Berlin
2018-	Referee for Algebra & Number Theory, JEMS, Journal of Algebra, Comm. Math. Helev.