

Shuddhodan Kadattur Vasudevan

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Born: October 6, 1990—Chennai, India
Nationality: Indian
Gender: Male

Current position

October, 2022- Carmin fellow at Institut des Hautes Études Scientifiques

Earlier Positions

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

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

April '18-May '19 *Wissenschaftliche Mitarbeiter (Postdoctoral fellow)* 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*
Thesis Advisor: Prof. Vasudevan Srinivas

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

Publications

2022 “The (non-uniform) Hrushovski-Lang-Weil Estimates”, To appear in **Advances in Mathematics**.

2022 (with Yakov Varshavsky) “The Hrushovski-Lang-Weil Estimates”, To appear in **Algebraic Geometry**.

2021 “Algebraic entropy for smooth projective varieties”, To appear in **Math Res. Lett.**

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
2013-2018 Shyama Prasad Mukherjee Fellowship, CSIR, Govt. of India
2009-2011 National Initiative for Undergraduate Science Fellowship, HBCSE-TIFR
2006-2008 Kishore Vaigyanik Protsahana Yojana (KVPY) Scholarship, Govt. of India

Academic visits

June, 2019 Mathematical Institute, Oxford, UK.
June, 2018 Mathematisches Institut, Ludwig Maximilians Universität, Munich, Germany
Dec., 2017 Department of Mathematical Sciences, IISER Mohali, India
June, 2014 Quantum Geometry of Moduli Spaces (QGM), Aarhus University, Denmark

Seminar and Conference talks

April, 2022 Brylinski-Radon transform in char. $p > 0$, AMS Sectional Meeting, Purdue

- June, 2021 The (non-uniform) Hrushovski-Lang-Weil estimates, Workshop on the Standard Conjectures, (Weil's) Riemann Hypothesis, and Relations to Dynamical Systems, Oslo
- June, 2021 The Hrushovski-Lang-Weil estimates, Recent Developments in Algebraic Geometry, Arithmetic and Dynamics, Singapore
- Dec, 2019 The (non-uniform) Hrushovski-Lang-Weil estimates, Algebraic Geometry seminar, University of Chicago
- August, 2019 The (non-uniform) Hrushovski-Lang-Weil estimates, Algebraic Geometry seminar, Purdue University
- June, 2019 The (non-uniform) Hrushovski-Lang-Weil estimate, Oxford Logic seminar
- May, 2019 Self maps of varieties over finite fields, HUJI, Jerusalem
- April, 2019 Self maps of varieties over finite fields, IIT Bombay
- April, 2019 The (non-uniform) Hrushovski-Lang-Weil estimates, TIFR Mumbai
- April, 2019 Self maps of varieties over finite fields, NISER Bhubaneswar
- March, 2019 Self maps of varieties over finite fields, IIT Madras, Algebra Seminar
- January, 2019 The (non-uniform) Hrushovski-Lang-Weil estimates, FU Berlin, Arithmetic Geometry, Guest seminar
- June, 2018 Self maps of varieties over finite fields, LMU Munich, Arithmetic and algebraic geometry seminar
- May, 2018 Self maps of varieties over finite fields, FU Berlin, Arithmetic Geometry, Guest seminar
- Dec., 2017 Self maps of varieties over finite fields, IISER Mohali, Mathematics Departmental Seminar
- June, 2014 Introduction to variation of Hodge structures, QGM Student Seminar, Aarhus University

Expository talks

- 2018 Beilinson's Basic Lemma, Students' seminar, TIFR, Mumbai
- 2018 Entropy Conjecture (after Gromov-Yomdin), Geometry seminar, TIFR, Mumbai
- 2016 Consequences of Riemann hypothesis for varieties over finite fields (after Katz-Messing), Students' seminar, TIFR, Mumbai
- 2013 The Euler class, Students' seminar, TIFR, Mumbai
- 2011 Quantum Mechanics and Hilbert Space (after G. W. Mackey), Boltzmann seminar, IIT Madras, Chennai
- 2009 Random walks, Boltzmann seminar, IIT Madras, Chennai

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
 Fall '15 Teaching assistant, Algebra I for the first-year students (Instructor Prof. N. Nit-
 sure), TIFR Mumbai

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)

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

2019 In the doctoral thesis committee of Marco D'Addezio at FU Berlin
 2018- Referee for Algebra & Number Theory, JEMS, Journal of Algebra
 2018 In the doctoral thesis committee of Tanya Kaushal Srivastava at FU Berlin
 2018 Examiner for the Bachelors thesis of Janine Schuhmann at FU Berlin