

Shuddhodan Kadattur Vasudevan

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Current position

Aug '24- *Assistant Professor* at the Department of Mathematics, University of Notre Dame, Notre Dame

Earlier Positions

Oct '22-Aug '24 *CARMIN fellow* at Institut des Hautes Études Scientifiques, Bures-Sur-Yvette

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

May-July '19 *Postdoctoral fellow* at Einstein Institute of Mathematics, Jerusalem

Apr '18-'19 *Wissenschaftliche Mitarbeiter* at Freie Universität Berlin, Berlin

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

- 2022 **Séminaire Bourbaki** titled “Sur un théorème de Lang–Weil tordu”, d’après Ehud Hrushovski, Kadattur V. Shuddhodan et Yakov Varshavsky
- 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

March '24 Algebraic Geometry Seminar, Stony Brook
 Oct '23 Séminaire d'Arithmétique, ENS Lyon
 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

Fall '24 Calculus III, Notre Dame
 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 UNIVERSITY

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

- 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, Math Annalen, Journal of Algebra, Comm. Math. Helev.