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EMPLOYMENT

Current Position. IST Plus Postdoctoral Fellow, started November 2018, IST Austria (Hausel Group)

EDUCATION

- **Freie Universität Berlin, PhD** (1 June 2015- 28 September 2018). PhD thesis supervised by Prof. Dr. Hélène Esnault, Freie Universität Berlin, titled “**On Derived Equivalences of K3 Surfaces in Positive Characteristic**.”
- **Indian Institute of Science Education and Research (IISER)**, Mohali, India. **BS-MS Dual Degree** (August 2010- May 2015): Mathematics Major, CPI: 9.9/10. Masters thesis supervised by Prof. Dr. Kapil Hari Paranjape, IISER Mohali, titled On Isolated Singularities.
- **XII Standard** (2010): 93% CBSE Board (Physics, Chemistry, Mathematics, Biology and English), India.
- **X Standard** (2008): 92.8% CBSE Board (Science, Mathematics, Social Sciences, English and Hindi) India.

PUBLICATIONS

Published.

- **On Derived Equivalences of K3 Surfaces in Positive Characteristic**, Documenta Mathematica, 24, 1135-1177, 2019.
- **First digit “One”**, Resonance, IAS and Springer: December 2013, Volume 18, Issue 12, pp 1073-1085.

Preprints.

- **Lifting Automorphisms on Abelian Varieties as Derived Autoequivalences** , I show that for Abelian Varieties, every automorphism lifts as a morphism if and only if it lifts as a derived autoequivalence to a characteristic zero lift. But even for the case of elliptic curves, there are more ways to lift an automorphism as an autoequivalence than just as a morphism, although in this case the autoequivalence we get are just twist of the lift of automorphism with the lift of the structure sheaf of the graph of the automorphism. This phenomenon happens in case of Calabi-Yau varieties as well.

Link: <https://arxiv.org/pdf/2001.07762.pdf>

In Preparation.

- **Counting Twisted Derived Equivalent Ordinary K3 Surfaces**, joint with Sofia Tirabassi and Piotr Achinger. We show that every Brauer class over an ordinary K3 surface has a preferred lift to the canonical lift of the underlying K3 surface and that height is a twisted derived invariant for K3 surfaces. We are working on a theory of moduli space of twisted K3 surfaces in characteristic p to be able to count the number of twisted derived Fourier-Mukai partner of an ordinary K3 surface.
- **Criterion for Twisted derived equivalences in positive characteristic**, joint work with Katrina Honigs.

We give another proof for the Caldararu’s criterion of checking when a twisted Fourier-Mukai functor gives an equivalence and we are working on extending a modified version of this criterion to positive characteristic.

AWARDS

- President of Indias Gold Medal (2015) for Best Academic performance across all majors for batch of 2015 at IISER.
- Academic Excellence Award for Best Academic performance in batch of 2015 (Mathematics Major).
- Academic Excellence Awards for Semester-I (2011-2012), Semester-II (2011-2012), Semester-I (2012-2013), Semester-II (2012-2013), and Semester-I (2013-2014).
- CNR Foundation Award Semester-II (2010-2011).
- CNR Foundation Award Semester-I (2010-2011).

FELLOWSHIPS

- **Berlin Mathematical School PhD Scholarship** (June 2015- June 2018)
- **DAAD (Deutscher Akademischer Austausch Dienst) PhD Fellowship** at Freie Universität Berlin, 2015 (did not avail).
- **CSIR NET JRF** (2014) (did not avail, PhD scholarship in India).
- **DAAD (Deutscher Akademischer Austausch Dienst) WISE Fellowship**(May July 2014) at Freie Universität, Berlin.
- **DAAD (Deutscher Akademischer Austausch Dienst) WISE Fellowship**(May July 2013) at Freie Universität, Berlin.
- **Kishore Vaigyanik Protsahan Yogana (KVPY)** (2010-2015) (Fellowship for pursuing undergraduate education for exceptional students in Science.)
- **Indian Academy of Sciences Summer Research Fellowship** (SRPF) (did not avail)
- **CBSE Merit Fellowship for Single Girl Child** (2008-2010) (Fellowship to encourage meritious girl students to pursue education in high school with all schooling expenses provided by Govt. of India).

TEACHING

- Graduate course on **Algebraic Curves and Moduli Spaces**, Spring 2020, IST Austria. (I have developed this course and I am teaching it as well.)
- Instructor in Supplementary course for MTH 101: Groups and Symmetry (Fall-2014), IISER Mohali.
- Teaching Assistant in BIO 606: Biostatistics (Fall - 2014), IISER Mohali.

INVITED TALKS

- Fourth Meeting for Young Women in Mathematics, University of Freiburg, May 1-3, 2019.
- University of Hannover at Guest Research Seminar in the group of Prof. Dr. Matthias Schuett, 13 December 2018.
- University of Bergen at Guest Research Seminar in the group of Prof. Dr. Sofia Tirabassi, 30 May 2016, Norway

POSTER PRESENTATION

- The Geometry of Derived Categories, University of Liverpool, September 9-13, 2019.
- Derived Categories and Geometry in Positive Characteristic, IMPAN, Warsaw, 30 June-06 July 2019.
- Géométrie Algébrique en Liberté (GAEL), Strasbourg University, Strasbourg, 18-22 June 2018.

TALKS AT WORKSHOPS

- Talk on “Deformation Quantization in spring school on “Enumerative Invariants from Differential Graded Lie Algebras and Categories, Montegufoni, Italy, March 25 - 31, 2018.
- Talk on “The L_η -operator” in workshop on “Integral p -adic Hodge theory”, Universität Bielefeld, Germany, April 10-12, 2017.

SEMINARS ORGANIZED

- Seminar: **Derived Algebraic Geometry**, IST Austria, Summer 2019 (with Quoc Ho).
- Seminar: **Formal Geometry and Deformation Theory**, Freie Universität Berlin, Winter 2017-18 (with Pedro A. Castillejo).
- Seminar: **p -adic Hodge Theory**, Freie Universität Berlin, Summer 2017 (with Marcin Lara).
- Seminar: **Crystalline Cohomology**, Freie Universität Berlin, Winter 2016-17 (with Efstathia Katsigianni).

TALKS IN SEMINARS

- (1) Talk on **Lie algebra attached to smooth projective variety and hyperkählers**, IST Austria, March 2020.
- (2) Talks on **Virtual fundamental classes and dg scheme** in Seminar on “Derived Algebraic Geometry”, IST Austria, Summer 2019.
- (3) Talks on **Derived categories of Ordinary K3 surfaces** in Working Seminar, IST Austria, Spring 2019.
- (4) Talk on **Formal Patching** in Seminar on “Abhyankars Conjecture”, Freie Universität Berlin, Summer 2018.
- (5) Talk on **Semistable Higgs Bundles** in Seminar on “ p -adic Simpson correspondence”, Freie Universität Berlin, Winter 2017-18.
- (6) Talk on **Introduction to Deformation theory** in Seminar on “Formal Geometry and Deformation Theory”, Freie Universität Berlin, Winter 2017-18.
- (7) Talk on **Locally Noetherian Formal Schemes** in Seminar on “Formal Geometry and Deformation Theory”, Freie Universität Berlin, Winter 2017-18.
- (8) Talk on **The Comparison Theorem** in Seminar on “Formal Geometry and Deformation Theory”, Freie Universität Berlin, Winter 2017-18.
- (9) Talk on **Derived categories and semi-orthogonal decompositions** in Seminar on “Derived categories and variation of GIT quotients”, Freie Universität Berlin, Winter 2017-18.
- (10) Talk on **Crystalline Cohomology and crystalline sheaves** in Seminar on “ p -adic Hodge Theory”, Freie Universität Berlin, Summer 2017.
- (11) Talk on **Almost Mathematics and Purity Theorem** in Seminar on “ p -adic Hodge Theory”, Freie Universität Berlin, Summer 2017.
- (12) Talk on **Shtukas for GL_2 , II** in Seminar on “Langlands correspondence for function fields”, Freie Universität Berlin, Summer 2017.
- (13) Talk on **Kollár’s paper on Nonrational hypersurfaces** in Seminar on “Rationality of varieties and decomposition of the diagonal”, Humboldt Universität, Winter 2016-17.
- (14) Talk on **p -adic integration and the Igusa zeta function** in Seminar on “Berkovich spaces, birational geometry and motivic zeta functions”, Freie Universität Berlin, Winter 2016-17.
- (15) Talk on **Comparison Isomorphisms and p -adic Hodge theory** in Seminar on “Crystalline cohomology”, Freie Universität Berlin, Winter 2016-17.
- (16) Talk on **Properties of crystalline Cohomology”** in Seminar on “Crystalline Cohomology”, Freie Universität Berlin, Winter 2016-17.
- (17) Talk on **Introduction to Crystalline Cohomology** in Seminar on “Crystalline cohomology”, Freie Universität Berlin, Winter 2016-17.
- (18) Talk on **D-modules of K3 surfaces and Unirational varieties** in Seminar on “D-modules”, Freie Universität Berlin, Summer 2016
- (19) Talk on **Skeleta of curves** in Seminar on “Berkovich Spaces”, Humboldt Universität Berlin, Summer 2016
- (20) Talk on **Model Categories** in Seminar on “Motivic Galois groups and periods”, Freie Universität Berlin, Summer 2016
- (21) Mini lecture series on **Introduction to Derived Categories**, Freie Universität Berlin, Winter 2015-16.
- (22) Talk on **Supersingular K3 crystal** in Seminar on “Supersingular K3 surfaces are Unirational”, Freie Universität Berlin, Winter 2015-16.
- (23) Talk on **Functoriality, Affine stratification and Chow ring of Projective varieties** in Seminar on “Intersection Theory”, Freie Universität Berlin, Winter 2015-16.

CONFERENCES AND WORKSHOP ATTENDED

- Conference on “Wild Ramification and Irregular Singularities”, Warsaw, Poland, September 23-27, 2019.
- Conference on “Periods and Motives”, HU Berlin, Germany, 8-12 July, 2019.
- Workshop on “Derived algebraic geometry and its applications”, MSRI Berkley, USA, March 25-29, 2019.
- Conference on “The Arithmetic of Derived Categories”, Trento, Italy, July 4-6, 2018.
- Conference on “A Tale of Algebra and Geometry”, Pisa, Italy, June 4-7, 2018.
- Conference on “Crystals and Geometry in characteristic p ”, Munich, Germany, 4-6 April, 2018.
- Conference on “Algebraic Geometry with fancy coefficients”, Caen, France, 13-17 November, 2017.
- Summer school on “Current Trends in Algebraic and Arithmetic Geometry”, Texel, the Netherlands, 27 August-1 September, 2017.
- Stacks Project Workshop, University of Michigan, Ann Arbor, USA, 31 July-4 August, 2017.
- Conference on “Higgs Bundles, K3 Surfaces and Moduli”, Humboldt Universität Berlin, 10 - 12 July 2017
- Conference on “ p -adic Analytic Geometry and Differential Equations”, CIRM Luminy, France, 27 - 31 March 2017
- Higher Dimensional Algebraic Geometry and Characteristic p , CIRM Luminy, France, 12-16 September, 2016.
- Current Trends in Algebraic and Arithmetic Geometry, Vlieland, the Netherlands, August 29-September 2, 2016.
- Motives and Complex Multiplication, Ascona, Switzerland, 15-19 August 2016.
- Shimura Varieties, Leiden, the Netherlands, June 2022, 2016.
- Workshop: Generalizations of A-Homotopy Invariance in Algebraic Geometry and Homotopy Theory, Zinnowitz/Usedom, Germany, April 3-8, 2016.
- Hausdorff School: Derived Categories: Dimensions, Stability Conditions, and Enhancements, MPI Bonn, Germany, 29 March - 2 April 2016.
- HCM Workshop: Recent developments in integral p -adic cohomology theories, Bonn, Germany, February 28-March 3 2016.
- Summer School 2015 of the IRTG “Moduli and Automorphic Forms”, Siena, Italy, August 2015.
- Conference on Arithmetic Algebraic Geometry, Berlin, June 2013.

SOFT-SKILL TRAININGS

- Inter-cultural training, part of Berlin Mathematical School Soft-skill training program.
- Conflict Management, part of Berlin Mathematical School Soft-skill training program.
- Managing Your Project with Success, part of Dahlem Research School Soft-skill training program.

SOFTWARE DEVELOPED AND PROGRAMMING SKILLS

- Simulation Software on Hardy Weinberg Equilibrium (Using Visual C++).
- Simulation Software for Rickter Model of population growth (Using Visual C++).

LANGUAGES

English	Native and Medium of Education
Hindi	Native
German	Intermediate (Level B1)
French	Basic (Level A2)
Korean	Intermediate

EXTRA-CURRICULAR

- **Sports** Tennis, Badminton, Swimming and Martial Arts (Kick-boxing and Tae Kwon Do)