

# YAJNASENI DUTTA

## EMPLOYMENT

---

- Assistant Professor (Universitair Docent)**, Universiteit Leiden Sep. 2023–  
Mathematical Insitute (tenured Nov. 2024)
- Postdoc**, Rheinische Friedrich-Wilhelms-Universität Bonn Sep. 2022–Aug. 2023  
Complex Geometry Group of Prof. Daniel Huybrechts
- Hausdorff Postdoc**, Rheinische Friedrich-Wilhelms-Universität Bonn Sep. 2019–Aug. 2022  
Complex Geometry Group of Prof. Daniel Huybrechts

## SELECTED RESEARCH VISITS

---

- Visitor (ten days) Host: Prof. Daniel Huybrechts Oct. 2023  
Universität Bonn
- Visiting Scholar (three months) Host: Prof. Nero Budur Oct. 2019–Dec. 2019  
Katholieke Universiteit Leuven

## EDUCATION

---

- Northwestern University, USA** Sep. 2014–Aug. 2019  
Ph.D. Mathematics **Advisor:** Prof. Mihnea Popa
- University of Illinois at Chicago, USA** Aug. 2013–Aug. 2014  
Ph.D. candidate Mathematics **Advisor:** Prof. Mihnea Popa
- Chennai Mathematical Institute, India** Aug. 2011–Jul. 2013  
M.Sc., Mathematics
- Chennai Mathematical Institute, India** Aug. 2008–Jul. 2011  
B.Sc., Mathematics and Computer Science

## RESEARCH INTERESTS

---

Hyperkähler manifolds, cohomology jump loci, birational geometry, Hodge theory and Hodge module theory

## LIST OF PUBLICATIONS/PREPRINTS

---

8. **Twists of intermediate Jacobian fibrations.** jt. with D. Mattei, and E. Shinder  
preprint available at <https://arxiv.org/abs/2411.01953v1>
7. **Some density results for hyperkähler manifolds.** jt. with E. Izadi, L. Kamenova, and L. Marquand  
preprint available at <https://arxiv.org/abs/2403.04868>
6. **On symplectic birational self-maps of projective hyperkähler manifolds of  $K3^{[n]}$ -type.** jt. with D. Mattei and Y. Prieto-Montañez  
*International Mathematics Research Notices*, vol. 5 (2024) DOI:10.1093/imrn/rnae112
5. **Maximal variation of curves on  $K3$  surfaces** jt. with D. Huybrechts  
*Tunisian J. Math.* vol. 4, 2022, no. 3 DOI:10.2140/tunis.2022.4.443
4. **Generic Vanishing, 1-forms, and Topology of Albanese Maps** jt. with F. Hao and Y. Liu.  
*Math. Zeitschrift.* Volume 306, no. 56, (2024) DOI:10.1007/s00209-024-03438-3
3. **Vanishing for Hodge ideals on toric varieties**  
*Mathematische Nachrichten.* vol. 293, 2020. DOI:10.1002/mana.201800363
2. **Effective generation and twisted weak positivity of direct images** jt. with T. Murayama.  
*Algebra and Number theory.* vol. 13, no. 2, 2019. DOI:10.2140/ant.2019.13.425
1. **On the effective freeness of the direct images of pluricanonical bundles**  
*Annales de l'Institut Fourier*, vol. 70, no. 4, 2020 . DOI:10.5802/aif.3351

## GRANTS, AWARDS, FELLOWSHIPS AND RECOGNITION

---

- Starter Grant** for hiring a PhD student (€240,000), Universteit Leiden Sep. 2023

<b>Best Thesis in Mathematics</b> , Northwestern University	May 2019
<b>Gelfand Award</b> , Northwestern University awarded to the Ph.D. student who has contributed most to the department	May 2018
<b>University Fellowship</b> , University of Illinois at Chicago nominated by the Maths Department among the top 15% of newly recruited graduate students, receiving a full year's stipend and tuition waiver.	2013–2014
<b>Scholarship for Higher Education</b> , Department of Science and Technology, Govt. of India a component of the programme “Innovation in Science Pursuit for Inspired Research (INSPIRE)”	2008–2011
Qualified <b>regional mathematical olympiad</b> , West Bengal unique track for being part of the IMO-team, India and is held across regions throughout India	2007

## THESIS SUPERVISION

---

PhD Thesis (co-advising with Prof. Evgeny Shinder): <i>Céline Fietz</i> , Universiteit Leiden	Dec. 2023–
Master's Thesis (co-advised with Prof. E. Shinder): <i>Céline Fietz</i> , <b>Categorical Resolutions of A2 Singularities</b> Universität Bonn	Oct. 2022–Oct. 2023
Bachelor's Thesis: <i>Lucio Verrijer</i> , <b>The Morita Equivalence and (Graded) Brauer Groups.</b> Universiteit Leiden	Feb.–Jun. 2024

## TEACHING

---

Instructor: <i>Advanced Algebraic Geometry: Moduli of sheaves</i> national mastermath program, Vrije Universiteit Amsterdam.	Fall 2024
Instructor: <i>Mathematical Reasoning</i> Leiden University College.	Spring 2024
Instructor: <i>Algebraic Curves</i> Universiteit Leiden.	Fall 2023
Teaching Assistant: <i>Algebraic Geometry II</i> Universität Bonn.	Summer 2022
Teaching Assistant: <i>Algebraic Geometry I</i> Universität Bonn.	Winter 2022
Hauptseminar Algebra: <i>Klassische Algebraische Geometrie</i> Universität Bonn.	Winter 2022
Lecture course: <i>Selected Topics in AG: Moduli of Vector Bundles</i> Universität Bonn.	Winter 2021
Graduate Seminar: <i>Algebraic Curves and Abelian Varieties</i> Universität Bonn.	Winter 2020
Teaching Assistant: <i>Calculus (all levels), Linear Algebra, Foundations of Higher Math, Intro to Topology, Graph Theory</i> Northwestern Univ.	Fall 2015–Spring 2018
Grader: <i>Differential Topology, Algebraic Geometry</i> Northwestern Univ.	Fall 2014, Winter 2015

## INVITED WORKSHOP VISITS

---

<i>Collaborative workshop in Algebraic Geometry (WIAG)</i> IAS, Princeton	Jun. 2024
<i>Geometry of HyperKähler Varieties</i> IASM Hangzhou	Sep. 2023
<i>Women in Mathematical Physics II</i> Banff, Canada (participated online)	Aug. 2023
Arbeitsgemeinschaft : <i>Twistor D-Modules and the Decomposition Theorem</i> Mathematisches Forschungsinstitut Oberwolfach	Apr. 2023
<i>Algebraic Geometry: Moduli Spaces, Birational Geometry and Derived Aspects</i> Mathematisches Forschungsinstitut Oberwolfach	Jul. 2022
Summer School: <i>Irregular Riemann-Hilbert Correspondence</i> Centre Paul Langevin in Aussois	Sep. 2021

## INVITED TALKS

---

## Conference talks

<i>D-modules, local systems and applications</i> , CRM Montreal	Sep. 2024
<i>GQT symposium</i> , Nijmegen	Aug. 2024
<i>DIAMANT symposium</i> , Utrecht	Apr. 2024
<i>GQT section: Netherlands Mathematical Congress</i> , Lunteren	Apr. 2024
<i>Fano and Hyperkähler varieties</i> , Genova	Jan. 2024
<i>Belgian–Dutch Algebraic Geometry Meeting</i> , Leiden	Oct. 2023
<i>Geometry of HyperKähler Varieties</i> , Hangzhou	Sep. 2023
<i>Derived categories, Hodge theory and Singularities</i> , Sheffield	Jun. 2023
<i>Algebraic Geometry section: DMV-Jahrestagung</i> , FU Berlin	Sep. 2022
<i>Workshop: Curves and K3 surfaces</i> , Bonn	May 2022
<i>D-Modules: Applications to Algebraic Geometry, Arithmetic and Mirror Symmetry</i> , CIRM (Luminy)	Apr. 2022
<i>Singularities in the Midwest Workshop</i> , Wisconsin (Online)	May 2021
<i>AMS Fall Eastern Sectional, “Algebraic Singularities in Arbitrary Characteristic”</i> , (Online)	Oct. 2020
<i>Algebra, Algebraic Geometry and Number Theory section: DMV-Jahrestagung</i> , Chemnitz (Online)	Sep. 2020

## Seminars

Harvard–MIT Algebraic Geometry Seminar	Sep. 2024
Séminaire “Arithmétique et géométrie algébrique” de Strasbourg	Mar. 2024
Algebraic Geometry Seminar, Princeton University	Feb. 2024
Algebraic Geometry Seminar, USTC, Hefei	Sep. 2023
Seminar: ESAGA group joint oberseminar, Essen	Jul. 2023
Mathematics Colloquium, Institute of Mathematical Sc., Chennai	Aug. 2022
Algebraic Geometry Seminar, Columbia University	Mar. 2022
Algebraic Geometry Seminar, Stony Brook University (Online)	Sep. 2021
Algebraic Geometry Seminar, Princeton University (Online)	Jul. 2021
Online Algebraic Geometry Seminar, UC, San Diego, (Online)	Apr. 2021
Edinburgh Hodge seminar (online)	Jan. 2021
Algebra and Geometry Seminar, Frankfurt (Online)	Dec. 2020
Zoom seminar in TIFR, Mumbai (Online)	Nov. 2020
Oberseminar Algebraic Geometry, Hannover (Online)	Jul. 2020
Seminar on Applications of Hodge modules to birational geometry, HU Berlin, Germany	Jan. 2020
Oberseminar “Algebra und Theoretische Mathematik”, Chemnitz, Germany	Nov. 2019
Seminar Number Theory and Algebraic Geometry, KU Leuven, Belgium	Oct. 2019
Algebraic Geometry and Commutative Algebra Seminar, University of Notre Dame	May 2019
Algebraic Geometry Seminar, Johns Hopkins, Baltimore	Mar. 2019 & Sep. 2024
Algebraic Geometry Seminar, Univ. of Illinois, Urbana Champaign	Nov. 2018
D-modules in birational geometry – Short course (3 hours), Univ. of Chicago	Nov. 2018
Algebraic geometry Seminar, Univ. of Chicago	May 2018
Algebra and Combinatorics Seminar, Loyola Univ	Apr. 2018
CMI Seminar, Chennai Mathematical Institute	Dec. 2017 & Jun. 2020 (online)

Algebraic Geometry Seminar, Washington University, St. Louis

Oct. 2017

---

## ORGANISATION AND PROFESSIONAL SERVICES

Co-organising workshop: *K3 surfaces & friends: Brauer groups and moduli*, Lorentz Center, Leiden, July, 2025  
<https://www.lorentzcenter.nl/k3-surfaces-en-friends-brauer-groups-and-moduli.html>

Departmental Council Member, Consultation (Overleg) team, Mathematisch Instituut, Leiden Mar 2024 - present  
<https://www.universiteitleiden.nl/wiskunde-en-natuurwetenschappen/wiskunde/organisatie>

Co-organised *Intercity Geometry Seminar*, Amsterdam, Leiden, Utrecht, Antwerp, Summer semester 2024  
Informal intercity learning seminar: <https://www.math.leidenuniv.nl/~duttay/icspring24.html>

Co-organised: *Hodge Theory in Leiden*, a conference in honour of Chris Peters' 75th birthday, Sep 5-6, 2024  
<https://www.math.leidenuniv.nl/~duttay/peters75.html>

Organised mini-symposium *Around Hyperkählers and K3s*, Leiden, December 6, 2023  
<https://www.math.leidenuniv.nl/~duttay/hksymposium23.html>

Co-organised the *Graduate Research Opportunities for Women (GROW@Bonn)*, 2022, 2023, 2024  
Conference aimed at female bachelor students for promoting math academia as a career.  
<https://www.mpim-bonn.mpg.de/GROW2024>

Served as tutor for *Algebraic Geometry Summer School - Hyperkähler and Prym varieties*, ICTP, July 2021.  
<https://indico.ictp.it/event/9610/other-view?view=ictp timetable>

Served as a recruitment committee member for *W3 professorship in mathematics*, Bonn, September 2020.

Reviewer *MathSciNet* (until July 2024), *zbMATH*.

Referee and quick opinion *Inventiones Mathematicae*, *Forum of Math (Sigma)*, *PRIMS Kyoto*.

Co-organised *MAGGC (Midwest Algebraic Geometry Graduate Conference)*, funded partially by the NSF,  
May 25-27 2018, University of Illinois at Chicago.

Co-organised *Algebraic Geometry Student Seminar*, Fall 2017 - Spring 2018, Northwestern University.

Served as a panel member for *TA seminar for 2nd year graduate students* Nov. 7, 2017, Northwestern University.

Served as a panel member for *graduate school applications* for NUAWM (Northwestern University Association for Women in Mathematics), an undergraduate club. Winter 2017, Northwestern University.

---

## MISC. INFORMATION

Computer languages: Haskell, C, HTML, Latex.

Languages: Fluent in **English**, **Bengali** (native), **Hindi**.

General professional proficiency (Goethe-Zertifikat B2) in **German**.

Learning **Dutch**.