# Curriculum Vitae

**Daniel HUYBRECHTS**

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**Nationality:** German
**Marital status:** married, 2 children
**Date of birth:** 9.11.1966

## Education

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| 1981-85 | Heinrich-Hertz-Schule Berlin (GDR). |
| 1985-90 | Diplom Mathematics, Humboldt-University Berlin. |
| 1990-92 | PhD-student, Max-Planck-Institute for Mathematics Bonn and Humboldt-University Berlin. |
| 1997 | Habilitation. University Essen. |

## Academic employment

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| 1992-94 | Postdoc, Max-Planck-Institute for Mathematics Bonn. |
| 1994-95 | Postdoc, Institute for Advanced Study Princeton. |
| 1995-96 | Postdoc, Max-Planck-Institute for Mathematics Bonn. |
| 1996-97 | Assistant Professor, University Essen. |
| 1997-98 | Postdoc, École Normale Supérieure Paris. Marie-Curie Grant. |
| 1998-02 | Associate Professor, University Cologne. |
| 2002-03 | Professeur chargé de cours. École Polytechnique Paris. |
| 2002-05 | Professeur, Institut de Mathématiques de Jussieu, Paris 7. |
| 2005- | Professor Bonn (C4/W3). |

## Visiting positions

Senior fellow. ITS-ETHZ. 4-6.2022; 2-3.2023, 2-3.2024
GC Steward visiting fellow. Gonville and Caius College Cambridge. Lent 2020, hosted by Ivan Smith
Oxford, 2010-2011. EPSRC, hosted by Nigel Hitchin.
Imperial College London, 2007. Leverhulme, hosted by Richard Thomas.
Institut Henri Poincaré Paris, 2000. Special activity 'String theory'.
IHES Bures-sur Yvette, 1996, 2001.

## Research interests

Algebraic and complex geometry, moduli spaces of sheaves and varieties, K3 surfaces, hyperkähler manifolds, cubic hypersurfaces, derived categories and Fourier–Mukai transforms, relation to mirror symmetry and string theory.

**Editorial boards**

Bulletin et Mémoirs de la SMF (2005-2013).
Crelle Journal für die reine und angewandte Mathematik (since 2013, managing editor since 2022).
Kyoto Journal of Mathematics (2009-2023).
Inventiones mathematicae (since 2015).

**Honors & offers**

Member of the German National Academy of Sciences Leopoldina. Elected 2025.
Compositio Prize 2021 (for the period 2017-2019, shared with Bushnell–Henniart).
Plenary speaker at the annual meeting of the DMV 2020.
Invited speaker at the International Congress of Mathematicians, Hyderabad 2010.
Member of the Academia Europaea. Elected 2017.
Heidelberg 2007, Oxford (Savilian Professor of Geometry) 2017.

**Advisory boards & panels**

Selection Committee of the MPI, Bonn (since 2006).
Scientific Advisory Board of the ESI, Vienna (2011 – 2018).
Review Panel, SwissMap (2015 – 2025).
Conseil scientifique, INSMI, CNRS (2014 – 2018).
ERC grant panels (starting 2017/advanced 2019 & 2021 & 2023).
Selection committee of the Institut Universitaire de France (junior 2019/senior 2020/junior 2021).
Scientific committee Mathematisches Forschungsinstitut Oberwolfach (2019 – 2026).
Treasurer GMF Oberwolfach (2025 – ).
ICM 2022 sectional committee 'Algebraic and Complex Geometry' (core member).

**Administrative service (selection)**

Member of the Board of Directors (2007 – 2017, 2018), Vice-coordinator (2015 – 2017, 2018), HCM.
Director of Graduate Studies (BIGS) (2008-2010).
Head of Mathematical Institute (2013 – 2015, 2022 – 2024).
Leader of Research Area of the Hausdorff Center for Mathematics (since 2007).
Spokesperson (Bonn) of the SFB/TR 45 Bonn (2007 – 2019).

**Grant applications**

ERC Synergy Grant HyperK (joint with Debarre, Macrì, Voisin). 2020 – 2026.
Collaborative Research Center (SFB/TR 45) 'Periods, moduli spaces and arithmetic of algebraic varieties' Bonn - Mainz - Essen: 2007 – 2011, 2011 – 2015, 2015 – 2019.
Hausdorff Center for Mathematics: Foundations, Models, Applications. 2006 – 2012, 2012 – 2018, 2019 – 2025.
Marie-Curie postdoctoral fellowship (ENS Paris) 1997 – 1999.

**Organization of conferences, workshops, seminars (selection)**

Oberwolfach Workshop. Algebraic Geometry 2015, 2017, 2020, 2022, 2024.
Derived Category session. AMS Summer Institute in Algebraic Geometry. Utah (2015).
String-Math, Bonn 2012.
Advances in hyperkähler and holomorphic symplectic geometry, BIRS 2012.
Mirror symmetry, Bonn 2009.
SAG (weekly algebraic geometry seminar). Max-Planck Institute (since 2005).

Junior Trimester Program Algebraic Geometry. Hausdorff Institute. Bonn (2014).

**Students**

17 PhD students: M. Hartlieb (ongoing), J. Huang (ongoing), M. Varesco (ongoing), Th. Beckmann, I. Hellmann, E. Brakkee, U. Rieß, St. Schreieder, M. Kemeny, P. Sosna, H. Hartmann, H. Martinez, U. Schlickewei, E. Mistretta, S. Meinhardt, M. Chen, D. Ploog, M. Britze, M. Nieper-Wißkirchen.
Master/Diplom theses: 44; Bachelor theses: 42

**Teaching experience (selection)**

Courses (4 hours, 14 weeks each): Linear Algebra I-II; Analysis I-III, Complex geometry, Algebraic Geometry I-II, Galois theory, Commutative Algebra, Complex Analysis, Advanced topics in algebraic geometry (Lectures on K3 surfaces, Intersection theory and motives, Cubic hypersurfaces, Derived categories).
Students Seminars (2 hours, 14 weeks each): Complex geometry, Fourier–Mukai transforms, Quadratic forms, Hodge theory, Algebraic number theory, Classical algebraic geometry, Motives.

**Publications**

Books

1. *The geometry of cubic hypersurfaces*; Cambridge studies in advanced mathematics 206. Cambridge University Press, 440 pages (2023).
2. *Lectures on K3 surfaces*; Cambridge studies in advanced mathematics 159 Cambridge University Press, 500 pages (2016).
3. *The geometry of moduli spaces of sheaves*; Aspects of Mathematics E 31, Vieweg, 260 pages (1997). 2nd edition Cambridge University Press (2010). with M. Lehn
4. *Fourier–Mukai transforms in algebraic geometry*; Oxford Mathematical Monographs, 307 pages (2006).
5. *Complex geometry - an introduction*; Springer Universitext, 309 pages (2004).
6. *Calabi–Yau manifolds and related geometries*; Springer, 244 pages (2002). with D. Joyce, M. Gross

Articles

1. *Derived categories of Fano varieties of lines.* arXiv:2501.03534, 26 pages. submitted. with Alessio Bottini.
2. *The period-index problem for hyperkähler manifolds.* arXiv:2411.17604, 37 pages. submitted.
3. *The special Brauer group and twisted Picard varieties.* arXiv:2310.04032, 26 pages. submitted. with Dominique Mattei.
4. *Splitting unramified Brauer classes by abelian torsors and the period-index problem.* arXiv:2310.04029, 19 pages. submitted. with Dominique Mattei.
5. *The K3 category of a cubic fourfold - an update.* 15 pages. to appear in Beiträge zur Algebra und Geometrie. arXiv:2303.03820.
6. *Chow groups of surfaces of lines in cubic fourfolds.* Épijournal de Géométrie Algébrique. Special volume in honour of C. Voisin, Article No. 5 (2023). arXiv:2211.12186.

7. *Computing Riemann–Roch polynomials and classifying hyper-Kähler fourfolds* arXiv:2201.08152. JAMS 37, (2024), 151-185. with Olivier Debarre, Emanuele Macrì, Claire Voisin

8. *Dual fibrations.* pdf not submitted. with Thorsten Beckmann

9. *Characteristic foliations* arXiv:2201.07624. Bull. Lond. Math. Soc. 56 (2024), 2231–2249. with Farbizio Anella

10. *Nodal quintic surfaces and lines on cubic fourfolds*; L'Enseignement mathematique 70 (2024), 499–432. with an appendix by John Ottem

11. *On type II degenerations of hyperkähler manifolds*; Math. Res. Lett. 30 (2023), 125–141. with Mirko Mauri

12. *Lagrangian fibrations*; Milan Journal Math. 90 (2022), 459–483. with Mirko Mauri

13. *Semipositive line bundles (Campana–Peternell–Oguiso and Verbitsky)*; Milan Journal Math. 9 (2022), 389–401. with Fabrizio Anella

14. *Maximal variation of curves on K3 surfaces*; Tunisian Journal Math. 4 (2022), 443–464. with Yajnaseni Dutta

15. *Brilliant families of K3 surfaces: Twistor spaces, Brauer groups, and Noether–Lefschetz loci*; Ann. Fac. Sci. Toulouse Math. 32 (2023), 397–421.

16. *Complex multiplication in twistor spaces*; International Mathematics Research Notices, 2022, 3 (2022), 2095–2122.

17. *Lagrangian fibrations of hyperkähler fourfolds*; Journal IJM. 21 (2022), 921–932. with Chenyang Xu

18. *Hodge theory of cubic fourfolds, their Fano varieties, and associated K3 categories*; 30 pages. Birational Geometry of Hypersurfaces, Springer Lecture Notes della Unione Matematica Italiana, 267–295, 2019.

19. *Motives of isogenous K3 surfaces*; Commentarii Mathematici Helvetici 94 (2019), 445-458.

20. *Hochschild cohomology versus the Jacobian ring, and the Torelli theorem for cubic fourfolds*; Algebraic Geometry 6(1) (2019), 76–99. with J. Rennemo

21. *Finiteness of polarized K3 surfaces and hyperkähler manifolds*; Annales Henri Lebesgue 1 (2018) 227–246.

22. *Motives of derived equivalent K3 surfaces*; Abhandlungen aus dem Mathematischen Seminar der Universität Hamburg 88 (2018), 201–207.

23. *The K3 category of a cubic fourfold*; Compositio Mathematica 153 (2017), 586–620

24. *On derived categories of K3 surfaces and Mathieu groups*; Advanced Studies in Pure Math. 69 (Math. Soc. Japan) 2016

25. *Curves and cycles on K3 surfaces*; Algebraic Geometry 1 (2014), 69–106. (with an appendix by Claire Voisin)

26. *Stable maps and Chow groups*; Documenta mathematica 18 (2013), 507–517. WITH MICHAEL KEMENY

27. *Symplectic automorphisms of K3 surfaces of arbitrary order*; Math. Res. Lett. 19 (2012), 947–951.

28. *Stability conditions via spherical objects*; Math. Z. 271 (2012), no. 3-4, 1253–1270.

29. *A Global Torelli theorem for hyperkähler manifolds (after Verbitsky)*; Séminaire Bourbaki, Exp. No. 1040, Astérisque No. 348 (2012), 375–403.

30. *Chow groups and derived categories of K3 surfaces*; Current developments in algebraic geometry, 177–195, Math. Sci. Res. Inst. Publ., 59, Cambridge Univ. Press, Cambridge, 2012

31. *A note on the Bloch–Beilinson conjecture for K3 surfaces and spherical objects*; Pure Appl. Math. Q. 7 (2011), 1395–1405.

32. *Remarks on derived equivalences of Ricci-flat manifolds*; Math. Z. 267 (2011), 939–963. WITH MARC NIEPER-WISSKIRCHEN

33. *Formal deformations and their categorical general fibre*; Comment. Math. Helv. 86 (2011), 41–71. WITH EMANUELE MACRÌ, PAOLO STELLARI

34. *Deformation-obstruction theory for complexes via Atiyah and Kodaira–Spencer classes*; Math. Ann. 346 (2010), 545–569. WITH R. THOMAS

35. *Hyperkähler manifolds and sheaves*; Proceedings of the International Congress of Mathematicians. Volume II, 450–460, Hindustan Book Agency, New Delhi, 2010.

36. *Chow groups of K3 surfaces and spherical objects*; J. Eur. Math. Soc. (JEMS) 12 (2010), 1533–1551.

37. *Derived equivalences of $K3$ surfaces and orientation*; Duke Math. J. 149 (2009), 461–507. WITH EMANUELE MACRI, PAOLO STELLARI.

38. *The global Torelli theorem: classical, derived, twisted*; Algebraic geometry–Seattle 2005. Part 1, 235–258, Proc. Sympos. Pure Math., 80, Part 1, Amer. Math. Soc., Providence, RI, 2009.

39. *Stability conditions for generic K3 categories*; Compos. Math. 144 (2008), 134–162. WITH EMANUELE MACRI, PAOLO STELLARI.

40. *Derived and abelian equivalence of K3 surfaces*; J. Alg. Geom. 17 (2008), 375–400.

41. *Projectivity of Kähler manifolds–Kodaira's problem (after C. Voisin)*; Séminaire Bourbaki, Exp. No. 954, Astérisque No. 311 (2007), 55–73.

42. *$\mathbb{P}^n$-objects and autoequivalences of derived categories*; MRL 13 (2006), 87–98. WITH R. THOMAS.

43. *Proof of Caldararu's conjecture*; Adv. Stud. Pure Math. 45, Math. Soc. Japan, Tokyo (2006), 31–42. WITH PAOLO STELLARI.

44. *Equivalences of twisted K3 surfaces*; Math. Ann. 332 (2005), 901–936. WITH P. STELLARI.

45. *Generalized Calabi-Yau structures, K3 surfaces, and B-fields*; Int. J. Math. 16 (2005), 13–36.

46. *Moduli spaces of hyperkähler manifolds and mirror symmetry*; Intersection theory and moduli, ICTP Lect. Notes, XIX, Abdus Salam Int. Cent. Theoret. Phys. Trieste (2004), 185–247.

47. *The Kähler cone of a compact hyperkähler manifold*; Math. Ann. 326 (2003), 499–513.

48. *The Brauer group of analytic K3 surfaces*; Int. Math. Res. Not. (2003), 2687–2698. WITH STEFAN SCHRÖER.

49. *Finiteness results for compact hyperkähler manifolds*; J. Reine Angew. Math. 558 (2003), 15–22.

50. *Product of harmonic forms and rational curves*; Documenta Math. 6 (2001), 227–239.

51. *Compact hyperkähler manifolds: Basic results*; Invent. Math. 135 (1999), 63–113.

52. *Birational symplectic manifolds and their deformations*; J. Diff. Geom. 45 (1997), 488–513.

53. *Hodge numbers of moduli spaces of stable sheaves on K3 surfaces*; Int. J. Math. 7 (1996), 359–372. WITH LOTHAR GÖTTSCHE.

54. *The tangent bundle of a Calabi–Yau manifold–Deformations and restrictions to rational curves*; Comm. Math. Phys. 171 (1995), 139–158.

55. *Framed modules and their moduli*; Int. J. Math. 6 (1995), 297–324. WITH MANFRED LEHN.

56. *Stable pairs on curves and surfaces*; J. Alg. Geometry 4 (1995), 67–104. WITH MANFRED LEHN.

57. *Complete Curves in moduli spaces of stable bundles on surfaces*; Math. Ann. 298 (1994), 67–78.