

Lars H. Halle

Curriculum Vitae

Department of Mathematics
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- Biographical** Born March 7th 1977 in Tonsberg, Norway. Norwegian citizen.
- Research** Algebraic and arithmetic geometry, with particular interest in topics such as degenerations of curves, abelian varieties and Calabi-Yau varieties; motivic integration and zeta functions; rational points; Néron models; Hilbert schemes.
- Education** November 22nd 2007. *PhD, Mathematics*, KTH Stockholm. Advisor: C. Faber. Thesis: *Stable reduction of curves and tame ramification*.
Dec 2001. M.Sc. in Mathematics, University of Oslo.
- Habilitation** Abilitazione Scientifica Nazionale Professore I fascia (Italian habilitation for full professor), since 2021.

Employment

- Feb 1, 2021–present Associate Professor at the Dept. of Mathematics, U. of Bologna.
- Aug 1, 2014–Jan 31, 2021 Associate Professor at the Dept. of Mathematical Sciences, U. of Copenhagen.
- Aug 1, 2013–July 31, 2014 Associate Professor at U. of Stavanger.
- Oct 1, 2010–July 31, 2013 Postdoc at U. of Oslo.
- Jan 1, 2009–Sep 30, 2010 Postdoc at Leibniz Universitat Hannover.
- Jan 1, 2008–Dec 31, 2008 Postdoc at KU Leuven.

PhD-students and postdocs

- PhDs: Annelies Jaspers (2013–2017, joint supervision with J. Nicaise), Andrea Ricolfi (2013–2017, joint supervision with M. Gulbrandsen), Luigi Pagano (2018–2021). (*A. Ricolfi is currently Associate Professor in mathematics at SISSA, Trieste.*)
- Mentoring of postdocs: Sho Tanimoto (2015–2017, currently professor at Nagoya Univ.), Simon Rose (2015–2016), Daniel Bergh (2017–2019), Cody Gunton (2018–2020), Farbod Shokrieh (2018–2019, currently professor at Univ. of Washington, Seattle).

Selected offices, Academic Service, Professional activities:

- Reviewer for grant proposals: NSA Mathematical Sciences Grant Program (2011) and Research Foundation - Flanders, Belgium (2015).
- Member of committee, and external expert, for hiring of Postdoc at Dept. of Mathematics, U. of Bergen (2017).
- Head of committee for 2 Postdoc hirings at Dept. of Mathematics, U. of Bologna (2022).
- Opponent/member of PhD jury: KTH Stockholm (2014), U. of Copenhagen (2014 & 2017), KU Leuven (2016 & 2022), Imperial College London (2020), U. of Bologna (2022), U. of Poitiers (2023), U. Roma Tre (2025).
- Co-organizer of 13 international schools, conferences and workshops. Most recently: *Geometry, arithmetic and cohomology of higher dimensional algebraic varieties*, January 12–16, 2026, Univ. of Bologna (<https://sites.google.com/view/higherdimensionalbo26/home>)
- Teaching coordinator within Section for Topology, Algebra and Functional Analysis, Dept. of Math. Sciences, Univ. of Copenhagen (2018–2021).

Funding

- Funding (approx. € 30K) obtained for summer school *Toric Degenerations and Mirror Symmetry* (Nordfjordeid 2014), from Foundation Compositio Mathematica, ERC (starting grant MOTZETA of J. Nicaise), U. of Oslo, U. of Bergen, U. of Stavanger, U. of Tromsø and NTNU. Co-applicant: J. Nicaise.
- Funding (approx. € 10K) obtained for summer school *Varieties of Calabi-Yau type* (the Banach Center Warsaw 2016), from Foundation Compositio Mathematica, the Banach Center Warsaw. Co-applicants: O. Kedzierski, M. Kapustka and V. Lazic.
- Funding (approx. € 10K) obtained from the following source: Styrelsen for Forskning og Innovation (Denmark). Co-applicants: D. Bergh (Univ. of Copenhagen) and F. Shokrieh (Cornell Univ.).
- Luigi Pagano obtained a prestigious TALENT Doctoral Fellowship from the Faculty of Science, University of Copenhagen (2018).
- Co-applicant and member of PRIN2022 *Symplectic varieties: their interplay with Fano manifolds and derived categories* (PI: Prof. Giovanni Mongardi).
- Funding (approx. € 11.5K) obtained for school/workshop *Geometry, arithmetic and cohomology of higher dimensional varieties* (Univ. of Bologna 2026), from Univ. of Bologna (*Bando strutture 2024*) and Dept. of Mathematics, Univ. of Bologna (*cofinanziamento*). Coorganizer and coapplicant: Luca Battistella.

Collaborators

Johannes Nicaise, Imperial College London, UK & KU Leuven, Belgium (8 papers)
Klaus Hulek, Leibniz Universität Hannover, Germany (4 papers)
Martin Gulbrandsen, University of Stavanger, Norway, (3 papers)
Dennis Eriksson, Chalmers, Gothenburg, Sweden (2 papers)
Fedor Bogomolov, Courant Institute, New York University, USA (1 paper)
Fabien Pazuki, University of Copenhagen, Denmark (1 paper)
Sho Tanimoto, Kumamoto University, Japan (1 paper)
Simon Rose, University of Copenhagen, Denmark (1 paper)
Ziyu Zhang, ShanghaiTech University, China (2 papers)

Teaching Experience

Lecturer and responsible for the following courses:

Univ. of Oslo:

- *Elliptic Curves*. Master level, 15 ECTS. Taught 2012.

Univ. of Stavanger:

- *Discrete Mathematics (MAT 120)*. Bachelor level, 15 ECTS. Taught 2013.
- *Real and Complex Calculus (MAT 210)*, Bachelor level, 15 ECTS. Taught 2014.

Univ. of Copenhagen:

- *Algebraic Geometry (NMAK14005U)*. Master level, 7.5 ECTS. Taught 7 times 2014-2020.
- *Commutative Algebra (NMAK14009U)*. Master level, 7.5 ECTS. Taught 6 times 2015-2020.
- *Geometry 1 (NMAA04013U)*. Bachelor level, 7.5 ECTS. Taught 2 times 2016-2017.
- *Algebraic Geometry 2 (NMAK16000U)*. Master level, 7.5 ECTS. Taught 4 times 2017-2020.

Univ. of Bologna:

- *Geometric Number Theory (97926)*. Master level, 6 ECTS. Taught 5 times 2022-2025.
- *Calculus and Linear Algebra (75660)*. Bachelor level (for the program in Economics)

and Finance), 12 ECTS. Taught 5 times 2021-2026.

Publication information

Author of 1 research monograph and 15 published papers.

Published in the following top journals: *Adv. Math.* (2), *Doc. Math.* (3), *Math. Ann.* (2), *J. Algebraic Geom.* and Springer's *Lecture Notes in Mathematics*.

Selected talks at conferences, and lecture series

2026	<i>Nasjonalt Matematikermøte 2026 (Meeting of the Norwegian mathematical society)</i> (Alg. and Geometry session), NTNU Trondheim, 10–11 September 2026.
2026	<i>Conference on Algebraic and Differential Geometry – Shanghai 2026</i> , Feishu (Fields Institute Shanghai), 1–5 June 2026.
2026	<i>Varieties with trivial canonical bundle and related geometry</i> , Univ. of Milano, 14–15 May, 2026.
2025	<i>Algebraic and tropical geometry of moduli spaces of curves</i> , Univ. of Bologna.
2024	<i>Gothenburg Freixit</i> , Chalmers Univ., Gothenburg.
2022	<i>Degenerations of Abelian Varieties</i> , Univ. of Padova. PhD course (16 hours).
2021	<i>Geometry and arithmetic of varieties with trivial canonical bundle</i> , Univ. of Oslo.
2019	<i>N-cube days XI</i> , Chalmers, Gothenburg.
2018	<i>Workshop on Birational Geometry</i> , HSE Moscow.
2017	<i>Models of Curves and Jacobians</i> , Stellenbosch Univ. PhD course (10 hours).
2017	<i>Zariski Density and Rational Points</i> , Univ. of Copenhagen.
2017	<i>Modern Geometry and Physics</i> , Loughborough Univ.
2017	<i>Toric Degenerations</i> , Univ. of Bristol.
2017	<i>Leuven Algebraic Geometry Day</i> , KU Leuven.
2017	<i>Dutch Intercity Number Theory Seminar</i> , Radboud Univ. Nijmegen.
2016	<i>Nordic Congress of Mathematicians</i> (Alg. Geo. session), Stockholm Univ.
2015	<i>Homological Mirror Symmetry, Deformation Quantization and Noncommutative Geometry</i> (masterclass), Univ. of Copenhagen. Lecture series (3×1 hours).
2013	<i>Motivic Invariants and Singularities</i> , Univ. of Notre Dame.
2012	<i>Algebraic and Complex Geometry</i> , Leibniz Univ. Hannover.
2012	<i>Galois Covers and Deformation</i> , Univ. of Bordeaux.
2011	<i>Nordic Conference in Algebraic Geometry</i> , KTH Stockholm.
2010	<i>Komplexe Analysis</i> , Oberwolfach.

International relations

- Longer research visits (≥ 2 weeks): *ENS, Paris*, 1 month (2010); *Leibniz Univ. Hannover*, 2 weeks (2011); *KU Leuven*, 3 weeks (2013); *Univ. of Trento*, 1 month (2015/2016); *Stellenbosch Univ.*, 2 weeks (2017); *Institut Mittag-Leffler*, 3 weeks (2021).
- Co-founder of the *Nordic Number Theory Network* (<http://www.n-cube.net/>).

Lars H. Halle

Publication list

1. **L. H. Halle:** *Stable reduction of curves and tame ramification*, PhD thesis, KTH (2007). Available at: <http://urn.kb.se/resolve?urn=urn:nbn:se:kth:diva-4494>
2. **L. H. Halle:** *Stable reduction of curves and tame ramification*, Math. Z. **265** Issue 3 (2010), 529–550.
3. **L. H. Halle:** *Galois actions on Néron models of Jacobians*, Ann. Inst. Fourier **60** No. 3 (2010), 853–903.
4. **L. H. Halle, J. Nicaise:** *The Néron component series of an abelian variety*, Math. Ann. **348**(3) (2010), 749–778.
5. **L. H. Halle:** *Degenerations of Calabi-Yau varieties, and the motivic monodromy conjecture*, Oberwolfach reports 7 Issue 3 (2010), 2293–2296.
6. **L. H. Halle, J. Nicaise:** *Motivic zeta functions of abelian varieties, and the monodromy conjecture*, Adv. Math. **227** (2011), 610–653.
7. **L. H. Halle, J. Nicaise:** *Jumps and monodromy of abelian varieties*, Doc. Math. **16** (2011), 937–968.
8. **L. H. Halle, J. Nicaise:** *Motivic zeta functions for degenerations of abelian varieties and Calabi-Yau varieties*, in: A. Campillo et al. (eds.), Recent Trends on Zeta Functions in Algebra and Geometry, Contemporary Mathematics, AMS and RSME (2012), 233–259.
9. M. Gulbrandsen, **L. H. Halle**, K. Hulek: *A Relative Hilbert-Mumford Criterion*, Manuscripta Math. **148** (2015), 283–301.
10. D. Eriksson, **L. H. Halle**, J. Nicaise: *A Logarithmic Interpretation of Edixhoven’s Jumps for Jacobians*, Adv. Math. **279** (2015), 532–574.
11. **L. H. Halle, J. Nicaise:** *Néron Models and Base Change*, Lecture Notes in Mathematics (Springer) **2156** (2016), x + 151 pages.
12. **L. H. Halle, S. Rose:** *Tropical Count of Curves on Abelian Varieties*, Commun. Number Theory Phys. **11**, No. 1 (2017), 219–248.
13. F. Bogomolov, **L. H. Halle**, F. Pazuki and S. Tanimoto: *Abelian Calabi-Yau threefolds: Néron models and rational points*, Math. Res. Lett. **25** No. 2 (2018), 367–392.
14. **L. H. Halle, J. Nicaise:** *Motivic Zeta Functions of Degenerating Calabi-Yau Varieties*, Math. Ann. **370**, No. 3–4 (2018), 1277–1320.
15. M. Gulbrandsen, **L. H. Halle**, K. Hulek: *A GIT construction of degenerations of Hilbert schemes of points*, Doc. Math. **24** (2019), 421–472.
16. M. Gulbrandsen, **L. H. Halle**, K. Hulek, Z. Zhang: *The geometry of degenerations of Hilbert schemes of points*, J. Algebraic Geom. **30** (2021), 1–56.
17. **L. H. Halle**, K. Hulek, Z. Zhang: *Relative VGIT, and an application to degenerations of Hilbert schemes*, Michigan Math. J. **73** (2023), 67–96.
18. D. Eriksson, **L. H. Halle**, J. Nicaise: *Base change conductors through intersection theory and quotient singularities*, Doc. Math. (Online First) (2026), 50 pages.
19. **L. H. Halle**, K. Hulek, Z. Zhang: *Degenerations of generalized Kummer varieties*, arXiv:2604.14890, 93 pages.

Educational texts and dissemination

1. **L. H. Halle:** *Lecture Notes For Commutative Algebra*. Lecture notes (2019), 63 pages.
2. **L. H. Halle:** *Calculus and Linear Algebra – Parts I-III*. Lecture Notes (2024), 210 pages.
3. **L. H. Halle:** *Pi greco*. Contribution to the series *Numeri che contano*, Dept. of Mathematics, Univ. of Bologna (2025).
4. **L. H. Halle:** *Cinque*. Contribution to the series *Numeri che contano*, Dept. of Mathematics, Univ. of Bologna (2025).

May 6, 2026

Lars H. Halle