CURRICULUM VITAE

JOHN CHRISTIAN OTTEM

Contact Information

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Academic positions

2020 -	Professor, University of Oslo
2016 - 2019	Associate Professor, University of Oslo
2013 - 2016	Postdoctoral Research Associate, DPMMS, University of Cambridge
2013 - 2016	Junior Research Fellow, King's College, Cambridge

Education

2010-2013	University of Cambridge , PhD in Mathematics Thesis: Ample subschemes and line bundles and partially positive line bundles Advisor: Prof. Burt Totaro
2007-2010	University of Oslo , MSc in Mathematics Thesis: <i>Cox rings of Projective Varieties</i> Advisor: Prof. Kristian Ranestad
2004-2007	University of Oslo, BSc in Mathematics

Extended academic visits: Isaac Newton Institute, Cambridge (2020), College de France (Spring 2019), MSRI Berkeley (Winter 2019), University of Bonn (Fall 2015), MPIM Bonn (Fall 2014), UCLA (Spring 2013), Paris 6 Jussieu (Winter 2013), MIT (Spring 2012).

Research Interests

Algebraic geometry, birational geometry, algebraic cycles, Hodge theory, Calabi–Yau manifolds

Publications

- 1. Planes in cubic fourfolds (with A. Degtyrarev and I. Itenberg) (2021)
- 2. An O-acyclic variety of even index (with F. Suzuki and an appendix by O. Wittenberg) (2020)
- 3. Tropical degenerations and stable rationality (with J. Nicaise) Duke Mathematical Journal (to appear)

- 4. A refinement of the motivic volume, and specialization of birational types (with J. Nicaise) Rationality of algebraic varieties. Progress in Mathematics, Vol. 342, 335–366
- Two Coniveau filtrations (with O. Benoist) (2020).
 Duke Mathematical Journal 170 (2021) 2719-2753
- A pencil of Enriques surfaces with non-algebraic integral Hodge classes (with F. Suzuki) (2019) Mathematische Annalen 377 (2020), 183–197.
- 7. On deformations of quintic and septic hypersurfaces (with S. Schreieder) Journal de Mathématiques Pures et Appliquées 135 (2020) 140-158.
- 8. Remarks on the positivity of the cotangent bundle of a K3 surfaces (with F. Gounelas) Épijournal de Géométrie Algébrique 4 (2020).
- 9. Curve classes on irreducible holomorphic symplectic varieties (with G. Mongardi). Communications in Contemporary Mathematics (to appear)
- Failure of the integral Hodge conjecture for threefolds of Kodaira dimension zero (with O. Benoist).
 Commentarii Mathematici Helvetici 95 (2020) 27-35.
- 11. A counterexample to the birational Torelli problem for Calabi-Yau threefolds (with J. V. Rennemo). Journal of the London Mathematical Society 97 (2018), 427-4402
- Positivity of the diagonal (with B. Lehmann).
 Advances in Mathematics 335 (2018), 664-695.
- 13. Effective cones of cycles on blow-ups of projective space (with I. Coskun, J. Lesieutre). Algebra and Number Theory 10 (2016) 1983-2014.
- Nef cycles on some hyperkähler fourfolds.
 Facets of Algebraic Geometry: A Collection in Honor of William Fulton's 80th Birthday. London Mathematical Society Lecture Note Series 472 (2022)
- Curves disjoint from a nef divisor (with J. Lesieutre). Michigan Mathematical Journal 65 (2016) 321–332.
- On subvarieties with ample normal bundle. Journal of the European Mathematical Society 18 (2017) 2459–2468
- Birational geometry of hypersurfaces in products of projective spaces. Mathematische Zeitschrift 280 (2015) 135–148
- Quartic spectrahedra (with K. Ranestad, B. Sturmfels, C. Vinzant). Mathematical Programming 151 (2015) 585–612
- Ample subvarieties and q-ample divisors.
 Advances in Mathematics 229 (2012), 2868–2887.
- Algebraic boundaries of Hilbert's SOS cones (with G. Blekherman, J. Hauenstein, K. Ranestad, B. Sturmfels). Compositio Mathematica 148 (2012), 1717–1735.
- 21. Components of the Hilbert scheme of space curves on quartic surfaces (with J. O. Kleppe). International Journal of Mathematics 26(2) (2015)
- Partially ample line bundles on toric varieties (with N. Broomhead, A. Prendergast–Smith) Glasgow Mathematical Journal 58 (2016) 587-598.
- Cox rings of K3 surfaces with Picard number 2.
 Journal of Pure and Applied Algebra 217 (2013), 709–715.
- On the Cox ring of P² blown up in points on a line.
 Mathematica Scandinavica 9, (2011), 21−31.

Other Publications

- Introduction of schemes (with G. Ellingsrud) Lecture notes for the algebraic geometry courses at the University of Oslo. ~470 pages (2017–)
- Introduction of varieties (with G. Ellingsrud) Lecture notes for the algebraic geometry courses at the University of Oslo. ~300 pages (2018–)
- Positivity of the diagonal, Oberwolfach reports (2017)
- Mori dream hypersurfaces, Oberwolfach reports (2014)
- Ample subschemes and partially positive line bundles, PhD thesis, Cambridge 2013.
- Cox rings of projective varieties. Master's thesis, Oslo, 2009.

Teaching

2016 -	University of Oslo – Lecturer
	MAT4210 – Algebraic geometry I (Spring 2022)
	MAT4215 – Algebraic geometry II (Spring 2022)
	MAT4210 – Algebraic geometry I (Spring 2021)
	MAT4215 – Algebraic geometry II (Spring 2021)
	MAT4230 – Algebraic geometry III (Fall 2020)
	MAT1110 – Calculus and Linear algebra (Spring 2020)
	MAT4200 – Algebraic geometry II (Spring 2020)
	MAT4200 – Commutative algebra (Fall 2019)
	MAT1110 – Calculus and Linear algebra (Exercise sessions) (Spring 2019)
	MAT4230 – Algebraic geometry III (Fall 2018)
	MAT4215 – Algebraic geometry II (Spring 2018)
	MAT2410 – Complex analysis (Fall 2017)
	MAT4215 – Algebraic geometry II (Spring 2017)
	MAT4230 – Algebraic geometry III (Fall 2016)
	MAT4215 – Algebraic geometry II (Spring 2016)
2014-2015	University of Cambridge – Lecturer
	Designed and lectured the following courses:
	'Topics in combinatorial algebraic geometry' (Winter 2015)
	'Moduli spaces of curves' (Spring 2014)
2011 - 2015	University of Cambridge – Supervisor/Instructor
	Differential Geometry (Winter 2015),
	Algebraic Geometry (Winter 2011, 2012),
	Linear Algebra (Spring 2014)
2006-2010	University of Oslo – Teaching Assistant
	MAT4200 – Commutative Algebra (four lectures 2009),
	MAT1120 – Linear Algebra, (Fall 2008), MAT1110 – Calculus and Linear Algebra.
	(Spring 2007, 2008, 2009, 2010), MAT1100 – Calculus (Fall 2006, 2007)

Postdocs

Seckin Adali (2016–2018) Claudio Onorati (2019–2021) Jørgen Vold Rennemo (2017–2021)

PhD Students

Bernt-Ivar Nødland. (2016–2019) Bjørn Skauli (2018–) Elisa Cazzador (2018–) (co-advisor) Martin Helsø (2017–) (co-advisor) Simen Westbye Moe (2020–) (co-advisor) Ola Sande (2020–) (co-advisor)

Master Students

Simen Westbye Moe. Degenerations and stable rationality. Oslo, 2019–2020. Søren Gammelgaard. Cubic hypersurfaces, their Fano schemes, and special subvarieties. Oslo, 2017–2018. Bjørn Skauli. The Cone Conjecture for Some Calabi-Yau Varieties. Oslo, 2016–2017 Magnus Vodrup. The Geometry of the Space of Curves of Genus 2. Oslo, 2015–2016 Tom Oldfield. Hilbert Schemes of Points in Projective Varieties. Cambridge, 2014–2015. Kristina Kubiliūtė. Surfaces in $\mathbb{P}^1 \times \mathbb{P}^1 \times \mathbb{P}^1$. Cambridge, 2014–2015. Erik Paemurru. Surfaces in $\mathbb{P}^1 \times \mathbb{P}^1 \times \mathbb{P}^1$ Cambridge, 2014–2015.

Bachelor Students

Jon-Magnus Rosenblad, Nikolai Thode Opdan, *Rational and irrational hypersurfaces* (2020). Camilla Marie Baastad. *Fermat's Last Theorem modulo p* (2018). Elias Fåkvam. *The Ax-Grothendieck theorem and model theory* (2018). Lucas Schnubel. *The Combinatorial Nullstellensatz* (2018).

Academic Service

Departmental service

2020–2021Section leader for Section 5 – Algebra, Geometry and Topology2020–Forskningsutvalget

Conference organization

Moduli and Algebraic Cycles. Research programme at the Mittag-Leffler institute, Fall 2021.

Arithmetic and Geometry of varieties with trivial canonical bundle, Oslo, Dec 1 - 3, 2020.

Combinatorics and Hodge theory. June 18th–22nd, 2018, Sophus Lie Conference Center Nordfjordeid, Norway.

Enumeration and Moduli. A conference celebrating the work of Geir Ellingsrud on the occasion of his 70th birthday. December 13–16th, 2018, University of Oslo, Norway.

Geometry of Moduli The Abel Symposium. August 7-11, 2017, Lofoten, Norway.

Polar geometry: A conference celebrating the work of Ragni Piene on the occasion of her 70th birthday. January 26–28, 2017, University of Oslo.

Stability conditions on triangulated categories and geometric applications. Nordfjordeid Summer School. June 13–17, 2016, Sophus Lie Conference Center, Nordfjordeid, Norway.

Invited Lecture Series

10th Swiss-French workshop in Algebraic Geometry 13 - 17 January 2020, in Charmey (near Gruyères, Fribourg, Switzerland) (January 2021).

The Integral Hodge Conjecture, GaEL Loughborough, UK. Four lectures covering material on the integral Hodge conjecture and birational geometry for PhD students and post docs (July 2021).

Positivity in higher codimension, Vieland, Netherlands. Four lectures covering material on higher codimension cycles and birational geometry for PhD students and post docs. (2017)

Higher codimension cycles RTG winter school. University of Illinois, Chicago. Four lectures (2016).

Positivity (with I. Coskun and M. Hering). Loughborogh. Covering material on higher codimension cycles and birational geometry for PhD students and post docs. Six lectures. (2014)

Research memberships

Moduli and Algebraic Cycles, Mittag-Leffler institute, 2021.
Motivic Geometry, CAS, Oslo, 2021.
K-theory, algebraic cycles and motivic homotopy theory, Newton Institute, Cambridge, 2020.
Birational geometry and moduli spaces. MSRI, Winter 2019.
Tropocal geometry, amoebas, and polytopes. Mittag-Leffler, Spring 2018.

Grants, Honors & Awards

Søstrene Dals Forskningspris
Viggo Brun prize, Norwegian Mathematical Society
Research programme at the Mittag–Leffler institute, 'Moduli and algebraic cycles', Fall 2021
Young Research Talents. 4 year research grant from the Research Council of Norway
Research Fellowship, King's college, Cambridge
St Catharine's College Prize for Distinction in Research.
Rayleigh-Knight-Smith Prize, University of Cambridge.
Gates Cambridge Scholarship. An highly competitive full scholarship for
PhD studies at Cambridge
Various Research and Travel grants from the Cambridge Philosophical Society.
NR Prize for best master's thesis, University of Oslo.
McKinsey&Co Scholarship, Oslo.
Fulbright Scholarship.

Invited Talks

2022	
	ICM 2022 satellite conference Recent Advances in Classical Algebraic Geometry, Cracow
	ICM 2022 satellite conference on Algebraic Geometry, Steklov Institute
	Birational Geometry conference, EPFL
	GÉOMÉTRIE ALGÉBRIQUE, en l'honneur de Claire Voisin, Institut Henri Poincaré
2021	'Riposte armonie', Ciro Ciliberto 60, Cetraro, Italy
	GAeL Loughborough,
	Projective and birational higher dimensional geometry, Università di Trieste (via Zoom)
	Séminaire de topologie, géométrie et algèbre, Nantes/Algers
	Tropical Geometry in Zoom TGiZ ('TGiF')
	Frankfurt algebraic geometry seminar

2020	Hannover algebraic geometry seminar
	Séminaire "Variétés Rationnelles", Paris 13
	Chalmers/Göteborg AG & NT seminar
	IMPANGA algebraic geometry seminar
	Stanford Algebraic geometry seminar
	'Rationality', Simons center, New York (cancelled)
	Iskovskikh algebraic geometry seminar, HSE Moscow (online)
	ZAG Algebraic Geometry seminar (online)
	'Variétés Rationnelles', Jussieu (Sorbonne Université, Paris) (cancelled)
	'K-theory, algebraic cycles and motivic homotopy theory', Newton institute, Cambridge
2019	Geometry and topology seminar, Imperial College, London
	The geometry of algebraic varieties (Olivier Debarre's 60th), CIRM, Luminy
	Fudan University, Workshop on algebraic geometry, China
	College de France, Paris
	Positivity and Vanishing theorems III, Lille University
	HSE Moscow, Workshop on birational geometry,
	Algebraic geometry seminar, University of Oslo
0010	MSRI, Berkeley, Algebraic geometry seminar
2018	Mapping problems and complex manifolds in projective spaces, USIO
	Leibnia Universität Hanneven, Wealshen an auhis humangunfassa
	I MII Munich Algebraic geometry cominen
	'Positivity in algebraic geometry' IBS Conter for Coometry and Physics, Secul Keree
	University of Milan Workshop on algebraic geometry
	'Tropical geometry amongs and polytopes' Mittag-Leffler Institute Stockholm
	Max Planck Institute Bonn Algebraic geometry seminar
	'Sheaves Curves and Moduli' Workshop Stavanger
2017	Geometry, Physics, and Representation Theory Seminar, Northeastern University.
-011	Columbia University. Algebraic geometry seminar
	Workshop on Periods and Ricci flat manifolds, Banach Center, Warsaw
	Humboldt-Universität zu Berlin, Algebraic Geometry Seminar
	ICMS conference on Positivity, Edinbugh
	University of Georgia, Athens, Algebraic geometry seminar
	UCLA Algebraic geometry seminar
2016	UIC Chicago Workshop on positive cycles
	British Algebraic Geometry Meeting, University of Edinburgh
	AIM Workshop on positive cycles, San Jose.
	Belgian-Dutch Algebraic Geometry Seminar, KU Leuven
	'Toric geometry', Oberwolfach
	Nordic Congress of Mathematicians, KTH Stockholm
	'Positivity and Vanishing theorems', Lille University
	Algebraic Geometry Satellite Conference of the ECM, Leibniz Universität Hannover
	ETH, Zürich, Algebraic geometry seminar
	University of Bergen, Algebraic geometry seminar
2015	Imperial College Algebraic geometry seminar
	HSE Moscow, 'Projective algebraic geometry', Fyodor Zak's 65th birthday conference
	EDGE days, University of Edinburgh
	'Minimal free resolutions, Betti numbers, and Combinatorics', ICMS, Edinburgh
	Stony Brook University, NY, Algebraic geometry seminar,
	Workshop on 'Recent developments on linear series', University of Padova.
0014	University of Cambridge. Algebraic geometry seminar.
2014	Albert-Ludwigs-Universität Freiburg, Algebraic geometry seminar
	Max Flanck Institute, Bonn, Algebraic geometry seminar
	Mittag-Lemer institute, stocknomi. Comerence dedicated to Dan Laksov

	Rice University. Algebraic geometry seminar
	EDGE days, University of Edinburgh
	University of Cambridge. Algebraic geometry seminar.
	Workshop on positivity and vanishing theorems. University of Lille
	Hausdorff Institute, Bonn. Algebraic geometry Seminar
	'Negative curves on surfaces', Oberwolfach
	University of Milan–Bicocca. Algebraic geometry workshop
2013	Humboldt-Universität zu Berlin. Algebraic geometry seminar
	University of Bayreuth. Algebraic geometry seminar
	University of Edinburgh. Algebraic geometry seminar
	Paris VI, Jussieu. Algebraic geometry seminar.
	University of Strasbourg. Algebraic geometry seminar
	UCLA. Algebraic geometry seminar
	University of Cambridge. Algebraic geometry seminar.
2012	Stanford University. Algebraic geometry seminar.
	Imperial College. CALF seminar.
	'Classical Algebraic Geometry', Oberwolfach
	Harvard/MIT Algebraic geometry seminar, Harvard University.
	Harvard University. BAGS Seminar,
	University of Warwick. Warwick Algebraic Geometry Seminar,
2011	Universite Paris VI. Algebraic Geometry Seminar.
	University of Oxford. CALF seminar,
2009	Lukecin, Poland. Confernence 'Algebraic Torus Actions'
2006 -	Various AG seminars at the University of Oslo

Conferences Attended

2022	'Algebraic Geometry: Moduli Spaces, Birational Geometry and Derived Aspects'. Oberwolfach
2021	'Classical algebraic geometry'. Oberwolfach
2020	WAGS, Pomona College (online)
	Derived, Birational, and Categorical Algebraic Geometry, BIRS
	WAGON (Western Algebraic geometry online)
2019	'Birational geometry and moduli spaces'. MSRI
2018	'Classical algebraic geometry'. Oberwolfach
	'Tropical geometry, amoebas and polytopes', Mittag–Leffler institute, Stockholm
2017	Birational Classification, Derived Categories, and Moduli Spaces. Oberwolfach
	Positivity in Higher-dimensional Geometry. Oberwolfach
2016	Summer school on stability conditions, Nordfjordeid
	'Toric geometry', Oberwolfach
	British Algebraic Geometry Meeting, ICMS, Edinburgh
2015	Hopf Prize lectures, ETH.
	Algebraic geometry conference, Summer institute, Utah
	EDGE days, University of Edinburgh
	Stein Arild Strømme Memorial conference, University of Bergen
	Algebraic geometry Conference, Institute of Advanced Study, Princeton
	'New techniques in Birational geometry', Stony Brook University
2014	Birational geometry of hyperkahler manifolds, Bonn
	Conference for Young Researchers in Arithmetic and Algebraic Geometry, University of Bonn
	BrAG (British Algebraic Geometry Meeting), Warwick
	'Complex Analysis and Geometry', Freiburg Institute for Advanced Studies
	'Asymptotic Aspects of Complex and Algebraic Geometry', at Milano Bicocca.
	Conference on hyperkähler manifolds, Hausdorff Institute, Bonn.
	'Traumatic', Algebraic geometry conference, Imperial College
	'Negative curves on surfaces'. Oberwolfach

	Algebraic geometry workshop, Milan Workshop on positivity and vanishing theorems. University of Lille
2013	Foliation theory in algebraic geometry, Simons center, NYC
	Conference on algebraic geometry at the University of Amsterdam.
	Geometrie Algebrique en Liberte (GAeL), at KTH and Stockholm University.
	Southern California Algebraic Geometry Seminar, UC San Diego.
	Workshop on algebraic geometry, Imperial College.
	Dynamics of Groups and Rational Maps, UCLA.
	Characteristic p methods in algebraic geometry, Imperial College.
2012	Southern California Algebraic geometry seminar, Caltech.
	Western Algebraic Geometry Seminar, University of Utah.
	Algebraic and Complex Geometry, Leibniz Universität Hannover.
	LMS Symposium on birational geometry, Durham University.
	Classical Algebraic Geometry, Oberwolfach.
	Geometry of Moduli spaces, Nordfjordeid.
	Workshop on Kähler geometry, University of Cambridge.
2011	MEGA 2011: Effective Methods in Algebraic Geometry, Stockholm.
	Moduli Spaces, University of Cambridge.
	Derived Categories, University of Cambridge.
2009	Algebraic Torus Actions, Lukecin, Poland.
	Moduli, conference and summer school, Humboldt-Universität zu Berlin.
	25th Nordic and 1st British-Nordic Congress of Mathematicians, University of Oslo.
2007 - 2012	Various summer schools in algebraic geometry, Nordfjordeid.
2006 - 2008	KoMiN: Conference for mathematics students in Norway.