

RUADHAÍ DERVAN

Email address: rd430@cam.ac.uk | Address: Gonville & Caius College, Cambridge

POSITIONS

University of Cambridge Royal Society University Research Fellowship.	October 2020 – September 2025
Gonville & Caius College, University of Cambridge Research Fellow (2016 - 2021), Fellow (2021 - present).	October 2016 – present
École Polytechnique, Paris Postdoctoral position, hosted by Sébastien Boucksom.	September 2017 - August 2018
Université libre de Bruxelles Visiting PhD student, hosted by Joel Fine. Fondation Wiener-Anspach Scholar.	February - August 2016

EDUCATION

PhD in Mathematics , University of Cambridge St. John's College Thesis title “Canonical Kähler metrics and K-stability”. Supervised by Julius Ross.	2012 - 2016
Part III of the Mathematical Tripos (MAST) , University of Cambridge St. John's College Distinction.	2011 - 2012
B.A.(Mod) Mathematics , Trinity College Dublin First class honours. Graduated top of year.	2007 - 2011

PUBLICATIONS AND PREPRINTS

Stability conditions for polarised varieties	<i>arXiv:2103.03177</i>
Z-critical connections and Bridgeland stability conditions (with J. McCarthy and L. Sektnan)	<i>arXiv:2012.15427</i>
Valuative stability of polarised varieties (with E. Legendre)	<i>arXiv:2010.04023</i>
Uniqueness of optimal symplectic connections (with L. Sektnan)	<i>Forum Math. Sigma. Vol 9 (2021) e18, pp. 1-37</i>
Moduli theory, stability of fibrations and optimal symplectic connections (with L. Sektnan)	<i>Geom. Topol. (to appear)</i>
Optimal symplectic connections on holomorphic submersions (with L. Sektnan)	<i>Comm. Pure Appl. Math. (to appear)</i>
K-semistability of optimal degenerations	<i>Q. J. Math. Vol. 71 (2020) Issue 3, pp. 989-995</i>
Moduli of polarised manifolds via canonical Kähler metrics (with P. Naumann)	<i>arXiv:1810.02576</i>
Extremal metrics on fibrations (with L. Sektnan)	<i>Proc. Lond. Math. Soc. (3) 120 (2020) pp. 587-616</i>
Stable maps in higher dimensions (with J. Ross)	<i>Math. Ann. Vol. 374 3-4 (2019), pp. 1033-1073</i>
Hermitian Yang-Mills connections on blowups (with L. Sektnan)	<i>J. Geom. Anal. (2021), no. 31, pp. 516-542</i>
The Kähler-Ricci flow and optimal degenerations (with G. Székelyhidi)	<i>J. Differential Geom. Vol. 116 (2020), no. 1 pp. 187-203</i>
Relative K-stability for Kähler manifolds	<i>Math. Ann. Vol. 372 Vol. 3-4 (2018) pp. 859-889</i>
K-stability for Kähler manifolds (with J. Ross)	<i>Math. Res. Lett. Vol. 24 No. 3 (2017), pp. 689-739</i>
A finite dimensional approach to Donaldson's J-flow (with J. Keller)	<i>Comm. Anal. Geom. (2019) Vol. 27, no. 5, pp. 1025-1085</i>

On K-stability of finite covers

Bull. Lond. Math. Soc. (2016) 48 (4) pp. 717-728

Non-reductive automorphism groups, the Loewy filtration and K-stability (with G. Codogni)

Ann. Inst. Fourier (Grenoble) 66 no. 5 (2016) pp. 1895-1921

Alpha invariants and coercivity of the Mabuchi functional on Fano manifolds

Ann. Fac. Sci. Toulouse Math. Sér. 6, 25 no. 4 (2016), pp. 919-934

Uniform stability of twisted constant scalar curvature Kähler metrics

Int. Math. Res. Not. IMRN (2016) Vol 15 pp. 4728-4783

Alpha invariants and K-stability for general polarizations of Fano varieties

Int. Math. Res. Not. IMRN (2015) Vol 16 pp. 7162-7189

OTHER TEXTS

Editor of “Moduli of K-stable varieties” conference proceedings, with G. Codogni and F. Viviani.

Springer INdAM Series Vol 31 (2019)

Appendix to “On K-polystability of cscK manifolds with transcendental cohomology class” by Z. Sjöström

Dyrefelt.

Int. Math. Res. Not. IMRN (2020) Vol. 9 pp. 2769-2817

GRANTS

American Institute of Mathematics SquaRE Grant

2021 - 2024

Awarded to fund collaborative visits to AIM California in four successive years (virtually in 2021), with T. Murphy, J. Ross, L. Sektnan and X. Wang.

London Mathematical Society Conference Grant

2021

Awarded to fund the workshop “K-stability and Kähler geometry” in Cambridge, with E. Legendre.

Royal Society University Research Fellowship

2020

Five year grant covering personal salary and research expenses.

CNRS Travel Grant

2020

Awarded with E. Legendre to fund visitors to Cambridge and personal travel costs for two years.

French Government Fellowship Host

2020

Host for E. Legendre’s fellowship in Churchill College, University of Cambridge, for nine months in 2020.

London Mathematical Society Research in Pairs Grant

2018

Awarded to fund a visit of L. Sektnan to the University of Cambridge.

ICMS Research in Groups Grant

2018

Awarded to fund a one month stay at the ICMS Edinburgh to participate in their Research in Groups program, with L. Sektnan.

INdAM Grant

2016

Awarded to fund the workshop “Moduli of K-stable varieties” in Rome, with G. Codogni, J. Stoppa and F. Viviani.

London Mathematical Society ECM Grant

2016

Awarded to fund personal costs of the European Congress of Mathematics 2016 in Berlin.

London Mathematical Society Scheme 8 Grant, Foundation Compositio Grant

2015

Awarded to fund “Postgraduate Conference in Complex Geometry” at the University of Cambridge, with J. Ross.

ACADEMIC VISITS

University of Notre Dame

September 2016

Visited Gábor Székelyhidi for three weeks.

Simons Center for Geometry and Physics, Stony Brook University

September - October 2015

Participated in the program “Moduli spaces and singularities in algebraic and Riemannian geometry” for four weeks.

CONFERENCE TALKS

Edge Days, University of Edinburgh (<i>upcoming</i>)	December 2021
Workshop on complex algebraic and analytic geometry, Tsinghua University (<i>virtual</i>)	May 2021
AMS Special Session on Differential Geometry and Geometric PDE (<i>virtual</i>)	May 2021
Edge Days, University of Edinburgh (<i>virtual</i>)	December 2020
K-stability, Simons Center for Geometry and Physics (<i>virtual</i>)	September 2020
Canonical Metrics and connections on Kähler manifolds and vector bundles, ICTS Bangalore (<i>cancelled</i>)	August 2020
Aarhus Complex Geometry Workshop (<i>cancelled</i>)	June 2020
Fano Varieties, Cone Singularities and their Links, University of Edinburgh	November 2019
Stability and Canonical Metrics on Bundles and Varieties, Brest	June 2019
Current Developments in Complex and Analytic Geometry, Cortona	June 2019
Birational Geometry, Kähler-Einstein metrics and Degenerations, HSE Moscow	April 2019
Singular metrics in Kähler geometry, CIRM Marseille	February 2019
Cambridge-Tokyo Algebraic Geometry Workshop, Isaac Newton Institute	December 2018
Degenerations of Calabi-Yau Manifolds, Institut Henri Poincaré Paris	May 2018
Constant Scalar Curvature Metrics in Kähler and Sasaki Geometry, CIRM Marseille	January 2018
Symposium in Geometry and Differential Equations, AMSS Beijing	July 2017
Current Developments and New Directions in Kähler Geometry, University of Notre Dame	June 2017
Positivity in Algebraic and Complex Geometry, ICMS Edinburgh	April 2017
Cambridge-Tokyo Algebraic Geometry Workshop, Isaac Newton Institute	March 2017
European Congress of Mathematics Berlin, Symposium Talk	July 2016
Recent Advances in Complex Differential Geometry, Toulouse	June 2016
Edge Days, University of Edinburgh	June 2015
Irish Workshop on Kähler Geometry and Geometric Analysis, University College Cork	May 2014
Edge Days, University of Edinburgh	June 2013

SEMINAR TALKS

Tokyo Institute of Technology (<i>virtual</i>)	June 2021
Loughborough University	June 2021
Loughborough University (<i>four talks, virtual</i>)	March 2021

Zoom Algebraic Geometry Seminar (<i>virtual</i>)	July 2020
University of Gothenburg Chalmers (<i>virtual</i>)	July 2020
University of Birmingham	February 2020
ICTP Trieste	January 2020
Université libre de Bruxelles	December 2019
University of Oxford	June 2019
University of Notre Dame	March 2019
University of Illinois at Chicago	March 2019
Université Grenoble Alpes	November 2018
École polytechnique fédérale de Lausanne	April 2018
Université Paul Sabatier Toulouse (<i>two talks</i>)	April 2018
Aarhus University	February 2018
Joint Bochum, Duisburg-Essen, Köln and Wuppertal Complex Geometry Seminar	February 2018
Université Paris-Sud	January 2018
University of Gothenburg Chalmers	November 2017
École Polytechnique Paris	November 2017
Université du Québec à Montréal	October 2017
Rutgers University-Newark	October 2017
Joint King's College London and University College London Geometry Seminar	October 2017
SISSA Trieste	May 2017
Université Pierre-et-Marie-Curie (Paris VI Jussieu)	May 2017
University of Edinburgh	February 2017
Newcastle University	December 2016
Imperial College London	November 2016
University of Notre Dame	September 2016
Université Paul Sabatier Toulouse	May 2016
Università degli Studi di Pavia	November 2015
Joint Johns Hopkins University and University of Maryland Complex Geometry Seminar	October 2015
Simons Center for Geometry and Physics, Stony Brook University	September 2015

Università degli Studi Roma Tre	March 2015
Université Pierre-et-Marie-Curie (Paris VI Jussieu)	February 2015
Università degli Studi di Pavia	November 2014
Aix-Marseille Université	November 2013
Junior seminars in Imperial College London (twice), Université libre de Bruxelles and University of Bath (Calf Junior Algebraic Geometry Seminar)	2013 – 2015

STUDENTS

Michael Hallam, DPhil student at the University of Oxford, co-supervised by Frances Kirwan.	2018 - present
John McCarthy, PhD student at Imperial College London, co-supervised by Simon Donaldson.	2019 - present
Annamaria Ortu, PhD student at SISSA Trieste, co-supervised by Jacopo Stoppa.	2020 - present
Qiangru Kuang, summer undergraduate research student at the University of Cambridge.	Summer 2019

TEACHING

DPMMS, University of Cambridge Lecturer Taught Part III Complex Manifolds, a 24 hour lecture course.	Lent Term 2019, 2020
DPMMS, University of Cambridge Part III Essay Supervisor Supervised a Part III Essays titled “Toric Kähler Geometry” (2020), “Deformed Hermitian Yang-Mills Connections on Holomorphic Line Bundles” (2021). Part III Essays are roughly analogous to masters theses in other universities.	2020, 2021
DPMMS, University of Cambridge Supervisor Supervised Part II Differential Geometry (2016), Part II Riemann Surfaces (2018) and Part IB Analysis & Topology (2019, 2020).	2016 - present
DPMMS, University of Cambridge Example Class Lecturer Presented assignment solutions and explanations to Part III Complex Manifolds students.	Lent term 2014, 2015
Linyi University, China Summer Lecturer Lectured an introductory 12 hour course on partial differential equations to final year mathematics undergraduates.	July 2012
School of Mathematics, Trinity College Dublin Revision Lecturer Lectured 6 hour revision courses for 2nd year mathematics and theoretical physics students in Complex Analysis (2010) and Equations of Mathematical Physics (2010, 2011).	August 2010, 2011

ACTIVITIES

Organiser of workshop “K-stability and Kähler geometry” (<i>upcoming</i>)	September 2021
Undergraduate admissions interviewer, Gonville & Caius College	December 2019, 2020
Finance Committee member, Gonville & Caius College	October 2019 - present
SCR Committee member, Gonville & Caius College	October 2018 - present

Organiser of workshop “Newcastle Complex Geometry Workshop”	July 2018
Organiser of conference “Moduli of K-stable Varieties”	July 2017
Organiser of conference “Postgraduate Conference in Complex Geometry”	September 2016
Local organiser of seminar series “Calf Junior Algebraic Geometry Seminar”	October 2013 - January 2016
Organiser of seminar series “Geometry Tea Junior Seminar”	October 2013 - October 2014
Organiser of Departmental Happy Hour	June 2013 - September 2014
Referee and quick opinions for Amer. J. Math., Asian J. Math, Compos. Math., Duke Math. J., Forum. Math. Pi, Geom. Topol., Int. Math. Res. Notices, Invent. Math., J. Algebraic Geom., J. Eur. Math. Soc., J. Inst. Math. Jussieu, Math. Ann., Pure Appl. Math. Q., Proc. Amer. Math. Soc., Proc. Edinb. Math. Soc., Proc. Lond. Math. Soc., Publ. Math. Inst. Hautes Études Sci., Selecta Math., two conference proceedings, zbMATH and Mathematical Reviews (MathSciNet).	2016 – present

AWARDS

Smith-Knight & Rayleigh-Knight Prize	2014
Awarded for an essay based on research completed in the first year and a half of PhD work.	
St John's College Scholarship and College Prize	2012
In recognition of high achievement in MAST in mathematics.	
Minchin Prize, Lloyd Exhibition, Hamilton Prize, Bishop Law Prize and Gold Medal	2010-2011
Awarded variously for finishing first in the third and fourth year examinations of the mathematics and theoretical physics degrees, with high final mark.	
Foundation Scholarship	2009
Awarded on the basis of scholarship exams taken in second year. Approximately fifteen are awarded across all disciplines to second year students each year.	

MEMBERSHIP

London Mathematical Society	2016 – present
-----------------------------	----------------