Ruadhaí Dervan

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Positions

University of Glasgow September 2022 - present
Senior Lecturer and Royal Society University Research Fellow.

University of Cambridge October 2020 - September 2022
Royal Society University Research Fellow.

Gonville & Caius College, University of Cambridge October 2016 - September 2022
Research Fellow (2016 - 2021), Fellow (2021 - 2022).

École Polytechnique, Paris September 2017 - August 2018
Postdoctoral position, hosted by Sébastien Boucksom.

Université libre de Bruxelles February - August 2016
Visiting PhD student, hosted by Joel Fine. Fondation Wiener-Anspach Scholar.

Education

PhD in Mathematics, University of Cambridge 2012 - 2016
St. John's College
Thesis title "Canonical Kähler metrics and K-stability". Supervised by Julius Ross.

Part III of the Mathematical Tripos (MASt), University of Cambridge 2011 - 2012
St. John's College
Distinction.

B.A.(Mod) Mathematics, Trinity College Dublin 2007 - 2011
First class honours. Graduated top of year.

Publications and preprints

On divisorial stability of finite covers *(with T. Papazachariou)*
Forum Math. Sigma Vol. 12 (2024) e65, pp. 1-29

The universal structure of moment maps in complex geometry *(with M. Hallam)*
arXiv:2304.01149, 41pp.

The birational geometry of GIT quotients *(with R. Reboulet)*
arXiv:2301.09227, 14pp.

Ding stability and Kähler-Einstein metrics on manifolds with big anticanonical class *(with R. Reboulet)*
J. Reine Angew. Math. (to appear), 39pp.

Stability conditions in geometric invariant theory *(appendix by A. Ibáñez Núñez)*
arXiv:2207.04766, 26 pp.

Extremal Kähler metrics on blowups *(with L. Sektnan)*
arXiv:2110.13579, 47 pp.

Stability conditions for polarised varieties
Forum Math. Sigma Vol. 11 (2024) e104, pp. 1-57

Z-critical connections and Bridgeland stability conditions *(with J. McCarthy and L. Sektnan)*
Camb. J. Math. (to appear), 73 pp.

Valuative stability of polarised varieties *(with E. Legendre)*
Math. Ann. 385 (2023) pp. 357-391

Uniqueness of optimal symplectic connections *(with L. Sektnan)*
Forum Math. Sigma Vol. 9 (2021) e18, pp. 1-37

Moduli theory, stability of fibrations and optimal symplectic connections *(with L. Sektnan)*
Geom. Topol. 25-5 (2021), pp. 2643-2697

Optimal symplectic connections on holomorphic submersions *(with L. Sektnan)*
Comm. Pure Appl. Math. Vol. 74 (2021) Issue 10, pp. 2134-2184

K-semistability of optimal degenerations
Q. J. Math. Vol. 71 (2020) Issue 3, pp. 989-995

Moduli of polarised manifolds via canonical Kähler metrics *(with P. Naumann)*
<div align="right">*arXiv:1810.02576, 28 pp.*</div>

Extremal metrics on fibrations *(with L. Sektnan)*
<div align="right">*Proc. Lond. Math. Soc. (3) 120 (2020) pp. 587-616*</div>

Stable maps in higher dimensions *(with J. Ross)*
<div align="right">*Math. Ann. Vol. 374 3-4 (2019), pp. 1033-1073*</div>

Hermitian Yang-Mills connections on blowups *(with L. Sektnan)*
<div align="right">*J. Geom. Anal. (2021), no. 31, pp. 516–542*</div>

The Kähler-Ricci flow and optimal degenerations *(with G. Székelyhidi)*
<div align="right">*J. Differential Geom. Vol. 116 (2020), no. 1 pp. 187-203*</div>

Relative K-stability for Kähler manifolds
<div align="right">*Math. Ann. Vol. 372 3-4 (2018) pp. 859-889*</div>

K-stability for Kähler manifolds *(with J. Ross)*
<div align="right">*Math. Res. Lett. Vol. 24 No. 3 (2017), pp. 689-739*</div>

A finite dimensional approach to Donaldson's J-flow *(with J. Keller)*
<div align="right">*Comm. Anal. Geom. (2019) Vol. 27, no. 5. pp. 1025-1085*</div>

On K-stability of finite covers
<div align="right">*Bull. Lond. Math. Soc. (2016) 48 (4) pp. 717-728*</div>

Non-reductive automorphism groups, the Loewy filtration and K-stability *(with G. Codogni)*
<div align="right">*Ann. Inst. Fourier (Grenoble) 66 no. 5 (2016) pp. 1895-1921*</div>

Alpha invariants and coercivity of the Mabuchi functional on Fano manifolds
<div align="right">*Ann. Fac. Sci. Toulouse Math. Sér. 6, 25 no. 4 (2016), pp. 919-934*</div>

Uniform stability of twisted constant scalar curvature Kähler metrics
<div align="right">*Int. Math. Res. Not. IMRN (2016) Vol 15 pp. 4728-4783*</div>

Alpha invariants and K-stability for general polarizations of Fano varieties
<div align="right">*Int. Math. Res. Not. IMRN (2015) Vol 16 pp. 7162-7189*</div>

OTHER TEXTS

Editor of "Moduli of K-stable varieties" conference proceedings, with G. Codogni and F. Viviani.
<div align="right">*Springer INdAM Series Vol 31 (2019)*</div>

Appendix to "On K-polystability of cscK manifolds with transcendental cohomology class" by Z. Sjöström Dyrefelt.
<div align="right">*Int. Math. Res. Not. IMRN (2020) Vol. 9 pp. 2769–2817*</div>

GRANTS

Isaac Newton Institute Programme Grant   2024
Funding to hold a programme titled "New equivariant methods in algebraic and differential geometry", with G. Bérczi, D. Brotbek, V. Hoskins, F. Kirwan and V. Nanda.

London Mathematical Society Collaborations with Developing Countries Grant   2024
Awarded to fund a two-week visit of Vamsi Pingali of the Indian Institute of Science Bangalore to the UK.

Royal Society Enhanced Research Expenses Grant   2023
Awarded to fund three PhD students.

Royal Society Enhanced Research Expenses Grant   2022
Awarded to fund a postdoctoral research assistant for fifteen months.

American Institute of Mathematics SquaRE Grant   2021 - 2023
Awarded to fund collaborative visits to AIM California in three 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

Isaac Newton Institute, University of Cambridge   Spring - summer 2024
    Organising and participating in the programme "New equivariant methods in algebraic and differential geometry" for several months.

Centre de Recherches Mathématiques, Montréal   Spring 2024
    Simons scholar, participating in a thematic programme on geometry for four weeks.

University of Oxford   February 2023
    Visiting Frances Kirwan for four weeks.

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

Gothenburg Complex Geometry, University of Gothenburg *(upcoming)*
                            August 2024

Current Trends in Kähler Metrics with Special Curvature Properties, CRM Montréal
                            June 2024

K-stability and birational geometry, Clay Research Workshop, Oxford
                            September 2023

UK Algebraic Geometry Network Meeting, Nottingham
                            September 2023

London-Paris Geometry Day, Jussieu
                            May 2023

Higher Dimensional Geometry, Simons Center for Geometry and Physics
                            May 2023

Birational Geometry and K-stability of Fano varieties, ICMS Edinburgh
                            November 2022

Kähler and non-Kähler Geometry: New Developments and Interactions, Aarhus
                            June 2022

Edge Days, University of Edinburgh

Workshop on complex algebraic and analytic geometry, Tsinghua University *(virtual)*

May 2021

AMS Special Session on Differential Geometry and Geometric PDE, Los Angeles *(virtual)*

May 2021

Edge Days, University of Edinburgh *(virtual)*

December 2020

K-stability, Simons Center for Geometry and Physics *(virtual)*

September 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

Tsinghua University *(virtual)*

March 2024

Università degli Studi di Roma Tor Vergata

December 2023

University of York

October 2023

Université libre de Bruxelles

June 2023

Université du Québec à Montréal

May 2023

UCLA Birational Geometry Seminar *(virtual)*

April 2023

ITS Westlake *(virtual)*	April 2023
University of Glasgow	January 2023
ICTP/SISSA Trieste	December 2022
University of Edinburgh	November 2022
University of Southern Denmark	October 2022
Aarhus-Gothenburg Complex Geometry Seminar	October 2022
École polytechnique fédérale de Lausanne	June 2022
University of Gothenburg Chalmers	May 2022
University College London	May 2022
Indian Institute of Science *(virtual)*	February 2022
Université du Québec à Montréal *(virtual)*	November 2021
University of Oxford	November 2021
London Geometry and Topology Seminar	October 2021
Liverpool University	October 2021
Tokyo Institute of Technology *(virtual)*	June 2021
Loughborough University	June 2021
Zoom Algebraic Geometry Seminar *(virtual)*	July 2020
University of Gothenburg Chalmers *(virtual)*	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 *(two talks)*	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

Minicourses and expository talks

Winter School on K-stability, CIRM Marseille — March 2025
Upcoming minicourse, length and topic to be confirmed.

Séminaires des Mathématiques Supérieures, Montréal — June 2024
Four-hour minicourse titled "Geometric invariant theory, moment maps, K-stability and its variants".

Geometry and Topology of (Almost) Complex Structures, held virtually — May 2023
One-hour expository lecture titled "Stability in Kähler geometry".

Loughborough University — March 2021
Four-hour minicourse titled "The complex geometry of Bridgeland stability conditions".

Postdocs

Theo Papazachariou, Royal Society funded postdoc at the University of Glasgow, then Simons Foundation/Isaac Newton institute funded postdoc at the Universities of Cambridge and Glasgow.
October 2022 - present

Rémi Reboulet, Royal Society funded postdoc at the University of Cambridge.
Spring - autumn 2022

PhD students

Mahmoud Elimam, PhD student at SISSA Trieste, co-supervised by Jacopo Stoppa.
2023 - present

Gabriel Frey, PhD student at the University of Glasgow.
2023 - present

Annamaria Ortu, PhD student at SISSA Trieste, co-supervised by Jacopo Stoppa.
2020 - 2023

John McCarthy, PhD student at Imperial College London, co-supervised by Simon Donaldson.
2019 - 2022

Michael Hallam, DPhil student at the University of Oxford, co-supervised by Frances Kirwan.
2018 - 2022

Master's and undergraduate research students

Audrey Antoine, M2 (Master's level) research, visiting Glasgow from Université Paris-Saclay, co-supervised by Inder Kaur.
Spring - summer 2024

Ioannis Karagiorgis, undergraduate research, Glasgow, co-supervised by Theo Papazachariou.
Summer 2023

Theresa Ortscheidt, undergraduate research, Glasgow, co-supervised by Theo Papazachariou.
Summer 2023

Alexia Corradini, M1 (Master's level) research, visiting Cambridge from École Polytechnique.
Spring - summer 2022

Ho Leung Fong, undergraduate research, Cambridge.
Summer 2021

Qiangru Kuang, undergraduate research, Cambridge.
Summer 2019

Teaching

Scottish Mathematical Sciences Training Centre (PhD level)   Winter 2023
Lecturer
    Lectured Riemann Surfaces, a 16-hour course.

Department of Mathematics & Statistics, University of Glasgow   2023 - present
Master's Thesis Supervisor
    Supervised Master's thesis titled "Quotients in algebraic and symplectic geometry" (2023 - 2024, ongoing).

DPMMS, University of Cambridge   Lent Term 2019, 2020
Lecturer
    Lectured Part III Complex Manifolds, a 24-hour course.

DPMMS, University of Cambridge   2020, 2021
Part III Essay Supervisor
    Supervised Part III Essays titled "Toric Kähler Geometry" (2020) and "Deformed Hermitian Yang-Mills Connections on Holomorphic Line Bundles" (2021).

DPMMS, University of Cambridge   2016 - 2022
Supervisor
    Supervised Part IA Analysis (2022), Part IA Groups (2022), Part IB Analysis & Topology (2019, 2020, 2021), Part IB Complex Analysis (2022), Part IB Geometry (2022), Part II Differential Geometry (2016) and Part II Riemann Surfaces (2018).

DPMMS, University of Cambridge   Lent term 2014, 2015
Example Class Lecturer
    Presented assignment solutions and explanations to Part III Complex Manifolds students.

Linyi University, China   July 2012
Summer Lecturer
    Lectured an introductory 12-hour course on partial differential equations to final year
    mathematics undergraduates.

School of Mathematics, Trinity College Dublin   August 2010, 2011
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).

COMMITTEE MEMBERSHIP

Member of Senate, University of Glasgow
                                                                October 2023 - present
Rankin-Sneddon Hiring Committee member, University of Glasgow
                                                                January 2023
Commemorations Committee member, Gonville & Caius College
                                                                December 2021 - September 2022
Research Fellowship (Sciences) Election Committee member, Gonville & Caius College
                                                                October 2021 - September 2022
Finance Committee member, Gonville & Caius College
                                                                October 2019 - September 2022
SCR Committee member, Gonville & Caius College
                                                                October 2018 - September 2022

CONFERENCE AND SEMINAR ORGANISATION

Co-organiser of Isaac Newton Institute programme "New equivariant methods in algebraic and differential
geometry"   January - June 2024
Co-organiser of conference "K-stability and moment maps", Isaac Newton Institute, Cambridge
                                                                May 2024
Co-organiser of seminar series "Glasgow Algebraic Geometry Seminar"
                                                                October 2023 - present
Co-organiser of conference "Around complex geometry", University of Illinois at Chicago
                                                                April 2023
Local organiser of seminar series "GLEN Algebraic Geometry Seminar"
                                                                September 2022 - present
Co-organiser of seminar series "Cambridge Algebraic Geometry Seminar"
                                                                October 2021 - September 2022
Co-organiser of conference "K-stability and Kähler geometry", University of Cambridge
                                                                September 2021
Co-organiser of workshop "Newcastle Complex Geometry Workshop", Newcastle University
                                                                July 2018
Co-organiser of conference "Moduli of K-stable Varieties", Sapienza - Università di Roma
                                                                July 2017
Co-organiser of conference "Postgraduate Conference in Complex Geometry", University of Cambridge
                                                                September 2016
Local organiser of seminar series "Calf Junior Algebraic Geometry Seminar"
                                                                October 2013 - January 2016
Co-organiser of seminar series "Geometry Tea Junior Seminar"
                                                                October 2013 - October 2014
Co-organiser of Departmental Happy Hour
                                                                June 2013 - September 2014

REVIEWING

PhD external examiner of Alessio di Lorenzo, University College London

October 2023

PhD external examiner ("opponent") of Mingchen Xia, University of Gothenburg Chalmers

October 2022

Grant reviewer for EPSRC, other international funding agencies and research centres

May 2020 - present

Undergradute admissions interviewer, Gonville & Caius College

December 2019, 2020, 2021

Referee and quick opinions for Amer. J. Math., Ann. Global Anal. Geom., Anal. Math., Asian J. Math, Bull. Lond. Math. Soc., Complex Manifolds, Compos. Math., Duke Math. J., Forum Math. Pi, Forum Math. Sigma, Geom. Topol., Int. Math. Res. Notices, Invent. Math., J. Algebraic Geom., J. Amer. Math. Soc., J. Diff. Geom., J. Eur. Math. Soc., J. Lond. Math. Soc., J. Reine Angew. Math., J. Inst. Math. Jussieu, Math. Ann., Math. Res. Lett., Math. Z., Michigan Math. J., Osaka J. Math., Pure Appl. Math. Q., Proc. Amer. Math. Soc., Proc. Edinb. Math. Soc., Proc. Lond. Math. Soc., Publ. Math. Inst. Hautes Études Sci., Selecta Math., Trans. Amer. Math. Soc., three conference proceedings, zbMATH and Mathematical Reviews (MathSciNet).

2016 - present

OTHER ACTIVITIES

Royal Institute Masterclass (outreach talk for Glasgow teenagers)

November 2023

INI/ICMS Correspondent, University of Glasgow

January 2023 - present

Outreach talk in Rounday School, Leeds

March 2022

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