Martin Kerin

Contact Information	School of Mathematical & Statistical Sciences	
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Research Interests

Riemannian Geometry: non-negative and positive sectional curvature; Lie group actions; torus actions; topology and geometry of smooth quotients; geometry of orbifolds; rationally elliptic manifolds.

Positions

Lecturer, School of Mathematical and Statistical Sciences, NUI Galway, Ireland	2019 -
Vertretungsprofessor (Professor), Math. Institut, Universität Bonn, Germany	April-Sept 2017
Akademischer Oberrat (Senior Lecturer), Math. Institut, WWU Münster, Germany	2017 - 2019
Research Member, Program in Differential Geometry, MSRI, Berkeley, USA	Mar-May 2016
Akademischer Rat (Lecturer), Math. Institut, WWU Münster, Germany	2011 - 2017
Wissenschaftlicher Mitarbeiter (Post-doc), Math. Institut, WWU Münster, Germany	2008 - 2011

Education

Habilitation in Mathematics, WWU Münster, Germany Sponsor: Burkhard Wilking	2017
Ph.D. in Mathematics, University of Pennsylvania, Philadelphia, PA, USA Advisor: Wolfgang Ziller	2008
M.Sc. in Mathematics, National University of Ireland, Maynooth, Ireland Advisor: David Wraith	2003
B.Sc. in Mathematics and Mathematical Physics, NUI Maynooth, Ireland Double Honours (First Class)	2001

Grant Awards

NUI Galway EDI Project Fund	2021
DFG Research Grant (Priority Program: Geometry at Infinity): KE 2248/1-1 // GA 2050/2-1 (co-PI: F. Galaz-García)	2017 - 2020
DFG Conference Grant: *Curvature and Global Shape* Under Priority Program: Geometry at Infinity (co-PI's: M. Wiemeler, B. Wilking)	2019
DFG Conference Grant: *Curvature and Global Shape* Under Priority Program: Geometry at Infinity (co-PI's: R. Lafuente, B. Wilking)	2017
NSF Conference Grant: *Representations of Riemannian Geometry* DMS–1720590 (PI: C. Escher; co-PI's: L. Kennard, M. Kerr, K. Tapp)	2017

Selected Articles

S. Goette, M. Kerin and K. Shankar, *Highly connected 7-manifolds, the linking form and non-negative sectional curvature*, preprint 2020.

S. Goette, M. Kerin and K. Shankar, *Highly connected 7-manifolds and non-negative sectional curvature*, Ann. of Math. **191** (2020), 829–892

F. Galaz-García, M. Kerin and M. Radeschi, *Torus actions on rationally elliptic manifolds*, Math. Z. **297** (2021), 197–221

F. Galaz-García, M. Kerin, M. Radeschi and M. Wiemeler, *Torus orbifolds, slice-maximal torus actions and rational ellipticity*, Int. Math. Res. Not. IMRN 2018 no. 18, 5786–5822

M. Kerin, *On the curvature of biquotients*, Math. Ann. **352** (2012), 155–178

M. Kerin, *Some new examples with almost positive curvature*, Geom. Top. **15** (2011), 217–260

Honours and Awards	Benjamin Franklin Fellowship, Department of Mathematics, University of Pennsylvania	2006
	Clay Mathematics Institute Summer School, MSRI	2005
	Karcher Fellowship, Department of Mathematics, University of Pennsylvania	2003
	London Mathematical Society Bursary	2002
	Irish Research Council for Science, Engineering and Technology Scholarship	2002
	National University of Ireland, Maynooth, Bursary	2001 - 2003
	National University of Ireland, Maynooth, Studentship	2001
	De Brún Prize, Department of Mathematics, National University of Ireland, Maynooth	2001
	Delort Prize, Department of Mathematics, National University of Ireland, Maynooth	1999
	Darré Exhibition, Department of Mathematics, National University of Ireland, Maynooth	1998

Conferences and Seminars Organised	Irish Geometry Seminar NUI Galway and Maynooth University, Ireland	2021 -
	Groups in Galway meets the Irish Geometry Conference (postponed) NUI Galway, Ireland	2020
	Workshop on Curvature and Global Shape WWU Münster, Germany	2011, 2013, 2015, 2017, 2019
	Representations of Riemannian Geometry St. Joseph's University, Philadelphia, USA	Aug 2017
	Seminar on Symmetry in Geometry MSRI, Berkeley, USA	Mar-May 2016
	Geometry Reading Seminar: *The Atiyah-Singer Index Theorem* WWU Münster, Germany	Winter 2009/10

Plenary Talks (Last 5 years)	*A pot-pourri of non-negatively curved 7-manifolds* Yorkshire-Durham Geometry Day, Durham University.	Dec 2020
	Highly connected 7-manifolds with non-negative sectional curvature Annual Meeting of the Irish Mathematical Society, National University of Ireland, Galway.	Sept 2019
	Highly connected 7-manifolds and non-negative sectional curvature New trends and open problems in Geometry and Global Analysis, Universität Marburg.	Aug 2018
	Non-negative curvature and the linking form Geometrie, Mathematisches Forschungsinstitut, Oberwolfach.	June 2018
	Non-negative curvature on exotic 7-spheres Irish Geometry Conference, National University of Ireland, Maynooth.	May 2017
	Non-negative curvature on exotic 7-spheres Reflections on Global Riemannian Geometry, University of Tennessee.	Aug 2016
	Non-negative curvature on exotic 7-spheres Geometrie, Mathematisches Forschungsinstitut, Oberwolfach.	June 2016

Other Talks (Last 5 years)	*A pot-pourri of non-negatively curved 7-manifolds* Algebra, Geometry and Number Theory Seminar, University of Bath.	Oct 2020
	A pot-pourri of non-negatively curved 7-manifolds Online Geometric Analysis Seminar, Peking University, Beijing.	Sept 2020
	A pot-pourri of non-negatively curved 7-manifolds Geometric Analysis Seminar, City University of New York.	July 2020
	A pot-pourri of non-negatively curved 7-manifolds Virtual Seminar on Geometry with Symmetries.	July 2020

Highly connected 7-manifolds with non-negative sectional curvature
Mathematics Seminar, National University of Ireland, Maynooth.   Dec 2019

Double disk-bundles in geometry and topology
Mathematics Seminar, National University of Ireland, Galway.   Oct 2019

Non-negative curvature and the linking form
Geometry-Topology Seminar, University of Pennsylvania.   May 2019

Double disk-bundle decompositions and rational ellipticity
Felix Klein Seminar, University of Notre Dame.   May 2019

Non-negative curvature on exotic 7-spheres
Pure Mathematics Seminar, University of Queensland.   Feb 2019

Non-negative curvature and the linking form
Australian-German Workshop on Differential Geometry in the Large, MATRIX Institute.   Feb 2019

Non-negative curvature and the linking form
Felix Klein Seminar, University of Notre Dame.   April 2018

Double disk-bundle decompositions and rational ellipticity
Geometry and Topology Seminar, University of Oklahoma.   March 2018

Non-negative curvature on exotic 7-spheres
Oberseminar Differentialgeometrie, Universität zu Köln.   Jan 2018

Non-negative curvature on exotic 7-spheres
Oberseminar Differentialgeometrie, Karlsruhe IT.   Jan 2018

Non-negative curvature on exotic 7-spheres
Oberseminar Differentialgeometrie, TU Dortmund.   June 2017

Curvature and exotic spheres
Department of Mathematics Colloquium, Université de Fribourg.   Mar 2017

Non-negative curvature on exotic 7-spheres
Oberseminar Topologie, Université de Fribourg.   Mar 2017

Non-negative curvature on exotic 7-spheres
Oberseminar Differentialgeometrie, MPI Bonn.   Jan 2017

Non-negative curvature on exotic 7-spheres
Differential Geometry Seminar, Università di Firenze.   Nov 2016

Slice-maximal torus actions, curvature and ellipticity
Seminar on Symmetry in Geometry, MSRI.   April 2016

Slice-maximal torus actions, curvature and ellipticity
Differential Geometry Seminar, UC Riverside.   April 2016

On semi-free actions whose orbit spaces are manifolds
Differential Geometry Seminar, Cal State, Fullerton.   April 2016

Slice-maximal torus actions, curvature and ellipticity
Geometry-Topology Seminar, University of Pennsylvania.   Feb 2016

SCHOLARLY AND PROFESSIONAL SERVICE

Referee: Geometry and Topology; Mathematische Annalen; Pacific Journal of Mathematics; IMRN; Transformation Groups; Journal of Topology; Proceedings of the AMS; Annals of Global Analysis and Geometry; Geometria Dedicata; Involve; Frontiers of Mathematics in China; Bulletin of the Irish Maths Society.

Reviewer: AMS Math Reviews.

Membership: Irish Mathematical Society.

Committees: Irish Mathematical Society: Education Subcommittee.

NUI Galway: School Advisory (Head of School); Research and Graduate Studies; Outreach and Communications; Financial Mathematics.

WWU Münster: Hiring Committee for W2-Professor (Diff. Geom./Geom. Analysis); Masters Admissions Committee.

MINI-COURSES TAUGHT	*Construction of manifolds with non-negative curvature: Biquotients* Téchnicas modernas en Geometría Riemanniana, UNAM, Mexico.	July-Aug 2014

TEACHING EXPERIENCE

Supervision

- Bachelor projects: 5 – NUI Galway

Lecturer/Dozent

- Measure Theory; Linear Algebra; Actuarial Mathematics – NUI Galway
- Geometrie I – Universität Bonn
- Seminar on the Classification of Surfaces – Universität Bonn, WWU Münster
- Analysis I, II – WWU Münster
- Calculus I – University of Pennsylvania

Assistant/Ansprechspartner

- Analysis I, III; Introduction to Analysis, Topology and Geometry; Complex Analysis; Curves and Surfaces; Differential Geometry I, II; Ricci Flow; Lie groups and homogeneous spaces; Morse Theory Seminar; Differential Geometry Seminar; Classification of Surfaces Seminar.
  (all WWU Münster)

Teaching Assistant/Tutor/Grader

- Calculus I, III; Advanced Linear Algebra; Topology and Geometric Analysis; Differential Geometry I, II (all University of Pennsylvania)
- Pre-Calculus; Finite Mathematics; Data Analysis; Calculus I, III; Linear Algebra; Operations Research; Statistics I (all NUI Maynooth)

INVITED CONFERENCE PARTICIPANT (LAST 5 YEARS)	Workshop on Curvature and Global Shape WWU Münster, Germany.	Aug 2021
	Geometrie Mathematisches Forschungsinstitut, Oberwolfach, Germany.	June 2020
	Annual Meeting of the Irish Mathematical Society National University of Ireland, Galway, Ireland.	Sept 2019
	Geometry of, and via, Symmetries University of Notre Dame, USA	April 2019
	Australian-German Workshop on Differential Geometry in the Large MATRIX Institute, Creswick, Australia.	Feb 2019
	New trends and open problems in Geometry and Global Analysis Universität Marburg, Germany.	Aug 2018
	Geometrie Mathematisches Forschungsinstitut, Oberwolfach, Germany.	June 2018
	Differentialgeometrie im Großen Mathematisches Forschungsinstitut, Oberwolfach, Germany.	July 2017
	Irish Geometry Conference National University of Ireland, Maynooth, Ireland.	May 2017
	Reflections on Global Riemannian Geometry University of Tennessee, Knoxville, TN, USA	Aug 2016
	Geometrie Mathematisches Forschungsinstitut, Oberwolfach, Germany.	June 2016
	Program on Differential Geometry MSRI, Berkeley, USA	Mar-May 2016

	Workshop on Curvature and Global Shape WWU Münster, Germany.	July 2019
	Representations of Riemannian Geometry St. Joseph's University, Philadelphia, USA	Aug 2017
	Workshop on Curvature and Global Shape WWU Münster, Germany.	July 2017
	Differential Geometry in the Large Università di Firenze, Florence, Italy.	July 2016
	Kähler Geometry, Einstein Metrics, and Generalizations MSRI, Berkeley, USA	Mar 2016
	Riemannian Topology Seminar Georg-August-Universität, Göttingen, Germany.	Nov 2015
	Workshop on Curvature and Global Shape WWU Münster, Germany.	July 2015
	Flowers & Friends Goethe-Universität, Frankfurt am Main, Germany.	March 2015

REFERENCES	Karsten Grove University of Notre Dame, Notre Dame, IN, USA *kgrove2@nd.edu*
	Burkhard Wilking Mathematisches Institut, WWU Münster, Germany *wilking@math.uni-muenster.de*
	David Wraith Maynooth University, Maynooth, Ireland *david.wraith@mu.ie*
	Wolfgang Ziller University of Pennsylvania, Philadelphia, PA, USA *wziller@math.upenn.edu*