

Associate Professor Diarmuid Crowley

Contact information	Diarmuid Crowley School of Mathematics & Statistics The University of Melbourne Parkville, VIC, 3000 Australia	Phone Fax Nationality Email Web	+61 3 834 44712 +61 3 834 44599 Australian diarmuidc23@gmail.com www.dcrowley.net
Education	Indiana University: Ph.D. in Mathematics, April 2002, Bloomington, Indiana, USA * <i>The classification of highly connected manifolds in dimensions 7 and 15</i> , supervised by James F. Davis University of Adelaide: Master of Science, January 1996, Adelaide, Australia, * <i>Principal bundles and the Dixmier Douady class</i> , supervised by Alan L. Carey University of Adelaide: B.Sc., Hons. 1st class, Pure Mathematics, Adelaide, May 1993 University of Adelaide: B.A., Philosophy, Adelaide, May 1992		
Employment	University of Melbourne 2017 Associate Professor, February 1st 2017 onwards University of Aberdeen 2014-2016 Professor, personal chair, January 1st - December 31st 2016 Senior lecturer, starting September 8th 2014 Universität Bonn and Max Plank Intitute for Mathematics 2009-14 Research post-doc * Scientific Administrator then Managing Editor of the Manifold Atlas Adelaide University 2008-9 Visiting research fellow Universität Bonn 2007-8 Research post-doc Universität Heidelberg 2004-7 Wissenschaftlicher Assistent, C1 - research and teaching post-doc		
Selected Publications	<ul style="list-style-type: none">• <i>Embeddings of non-simply-connected 4-manifolds in 7-space. II. On the smooth classification</i>, Proc. Roy. Soc. Edinburgh Sect. A (2022), 163–181 (with A. Skopenkov)• <i>Exotic G_2-manifolds</i>, 381 Math. Ann. (2021), 29–74 (with J. Nordström)• <i>Embeddings of non-simply-connected 4-manifolds in 7-space. I. Classification modulo knots</i>, Mosc. Math. J. 21 (2021), 43–98 (with A. Skopenkov)• <i>The Topological Period-Index Conjecture for $spin^c$ 6-manifolds</i>, Ann. K-Theory 5 (2020), 605–640 (with M. Grant)• <i>The rational homotopy type of $(n-1)$-connected manifolds of dimension up to $5n-3$</i>, J. Topol. 13 (2020), 539–575 (with J. Nordström)• <i>The classification of 2-connected 7-manifolds</i>, Proc. Lond. Math. Soc. 119 (2019), 1–54 (with J. Nordström)• <i>Harmonic spinors and metrics of positive scalar curvature via the Gromoll filtration and Toda brackets</i>, J. Topol. 11 (2018), 1076–1098 (with T. Schick and W. Steimle)• <i>Positive Ricci curvature on highly connected manifolds</i>, J. Diff. Geom. 106 (2017), 187–243 (with D. Wraith)• <i>The topology of Stein fillable manifolds in high dimensions II</i>, Geom. Topol. 19 (2015), 2995–3030 (with J. Bowden and A. Stipsicz)• <i>A new invariant of G_2-structures</i>, Geom. Topol. 19 (2015), 2949–2992 (with J. Nordström)• <i>Finite group actions on Kervaire manifolds</i>, Adv. Math. 283 (2015), 88–129 (with I. Hambleton)• <i>The topology of Stein fillable manifolds in high dimensions I</i>, Proc. Lond. Math. Soc. 109 (2014), 1363–1401 (with J. Bowden and A. Stipsicz)• <i>The Gromoll filtration, KO-characteristic classes and metrics of positive scalar curvature</i>, Geom. Topol. 17 (2013), 1773–1789 (with T. Schick)		

Accepted papers	<ul style="list-style-type: none"> • <i>The derivative map for diffeomorphisms of discs: An example.</i> To appear in Geom. Topol. (with T. Schick and W. Steimle); arXiv:2012.13634 • <i>Intermediate curvatures and highly connected manifolds.</i> To appear in AJM (with D. Wraith); arXiv:1704.07057
Selected submitted/posted papers	<ul style="list-style-type: none"> ◦ <i>Stably diffeomorphic manifolds and modified surgery obstructions,</i> (with Anthony Conway, Mark Powell and Joerg Sixt); arXiv:2109.05632 ◦ <i>On $H^*(BPU_n; \mathbb{Z})$ and Weyl group invariants,</i> (with X. Gu); arXiv:2103.03523 ◦ <i>The existence of contact structures on 9-manifolds,</i> (with H. Yang); arXiv:2011.09809 ◦ <i>The smooth classification of 4-dimensional complete intersections,</i> (with C. Nagy); arXiv:2003.09216
Grants	ARC Discovery Project 2022-25: <i>Topology in 7-dimensions</i> ; DP220102163
Conference talks	<p>Topology Special Session, AustMS (on-line), University of Newcastle, Newcastle, December 2021</p> <p>Topology Special Session, AustMS (on-line), University of New England, Armidale, December 2020</p> <p>Manifolds workshop, Harnessing Higher Structures, Newton Institute, Cambridge, December 2018</p> <p>Singularities: geometric, topological and analytic aspects, New York, August 2018</p> <p>AustMS Annual General Meeting, Topology Special Session, Macquarie, December 2017</p> <p>Analysis and Topology in Interaction, Cortona, June 2017</p> <p>Groups, manifolds and K-Theory: honouring Wolfgang Lück's 60th birthday, Münster, June 2017</p>
Invited seminars	<p>I have spoken in topology and geometry seminars in the following institutions, listed by country:</p> <p>UK: Oxford, Cambridge, Imperial College, UCL (twice), Manchester, Aberdeen (3 times), Edinburgh (3 times), Glasgow (4 times), Durham, Bath, Southampton; Germany: Cologne, Bonn, Göttingen, LMU München (twice), Heidelberg, Münster (twice), FU Berlin, Freiburg, Regensburg, Augsburg (twice), Stuttgart, Bielefeld, Karlsruhe, Leipzig; Denmark: Copenhagen (twice); Hungary: Rényi Institute (twice); Russia: Moscow State University (4 times), Independent University Moscow (twice); Switzerland: EPFL; France: Nantes; Holland Utrecht; Slovakia Bratislava; USA: Princeton (twice), University of Pennsylvania (twice), Penn State, Rutgers, Chicago (twice), Detroit, UC San Diego, UC Riverside, Binghamton, Notre Dame (twice), IU Bloomington (4 times); Canada: McMaster (3 times), Waterloo; Australia: Sydney (twice), Macquarie, Melbourne, Monash, Adelaide (3 times)</p>
International seminars and workshops	<p>Co-organiser: Manifolds and K-Theory: the legacy of Andrew Ranicki, ICMS, June-July 2021</p> <p>Co-organiser: Topology Special Session, AustMS, Monash, December 2019</p> <p>Analysis on Manifolds, Adelaide, September & October 2019</p> <p>Co-organiser: Australian-German Geometry workshop, MATRIX, January 2019</p> <p>Co-organiser: Topology of manifolds: interactions workshop, MATRIX, January 2019</p>
Administration	<p>MSc. co-ordinator March 2018 - July 2021</p> <p>Management Committee March 2018 - July 2021</p> <p>PPC Committee March 2018 - present</p>
Teaching	<p>Course work:</p> <p>MAST10005 Calculus 1, lecturer - 2022 S1</p> <p>MAST20026 Real Analysis, co-ordinator - 2021 S1</p> <p>MAST90023 Algebraic Topology, co-ordinator - 2018 S1 & 2020 S1</p> <p>MAST10006 Calculus 2, co-ordinator - 2019 S1</p> <p>Postgraduate supervision:</p> <p>J. Hammet, PhD, 2022 start, J. Stewart PhD 2022 start.</p> <p>C. Nagy, PhD, 2017 - 2021, <i>On the classification of 8-dimensional E-manifolds</i></p> <p>A. Hendrawan (expected completion late 2022)</p> <p>J. Hammet, MSc, 2020 - 2021, B. Sims, MSc, 2019-2020</p>
Research interests	Differential and algebraic topology and their interactions with differential geometry; the surgery classification of manifolds. Especially: 7-manifolds and G_2 -structures, almost contact structures, embeddings in co-dimension > 2 , mapping class groups in high dimensions and exotic spheres and the Gromoll filtration.
Professional Affiliations	Member of the Australian Mathematical Society