

Associate Professor Diarmuid Crowley

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| 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 Institute 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>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>Functorial semi-norms on singular homology and (in)flexible manifolds</i>, Algebr. Geom. Topol. 15 (2015), 1453–1499 (with C. Löh)• <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 rational classification of links of codimension > 2</i>, Forum Math. 26 (2014), 239–269 (with S. Ferry and M. Skopenkov)• <i>The Gromoll filtration, KO-characteristic classes and metrics of positive scalar curvature</i>, Geom. Topol. 17 (2013), 1773–1789 (with T. Schick)• <i>Kreck-Stolz invariants for quaternionic line bundles</i>, Trans. Amer. Math. Soc. 365 (2013) 3193–3225 (with S. Goette)• <i>A Classification of Smooth Embeddings of 4-manifolds in 7-space II</i>, Internat. J. Math. 22 (2011) 731–757 (with A. Skopenkov)• <i>The additivity of the ρ-invariant and periodicity in topological surgery</i>, Algebr. Geom. Topol. 11 (2011) 1915–1959 (With T. Macko)• <i>Stably diffeomorphic manifolds and $l_{2q+1}(\mathbb{Z}[\pi])$</i>, Forum Math. 23 (2011) 483–538 (with J. Sixt)• <i>The smooth structure set of $S^p \times S^q$</i>, Geom. Dedicata 148 (2010) 15–33• <i>The classification of S^3-bundles over S^4</i>, Differential Geom. Appl. 18 (2003) 363–380 (with C. Escher) | | |

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| Selected submitted/posted papers | <ul style="list-style-type: none"> ◦ <i>Harmonic spinors and metrics of positive scalar curvature via the Gromoll filtration and Toda brackets</i>, (with T. Schick and W. Steimle); arXiv:1612.04660 ◦ <i>Embeddings of non-simply-connected 4-manifolds in 7-space. II. On the smooth classification</i>, (with A. Skopenkov); arXiv:1612.04776 ◦ <i>Embeddings of non-simply-connected 4-manifolds in 7-space. I. Classification modulo knots</i>, (with A. Skopenkov); arXiv:1611.04738 ◦ <i>An analytic invariant of G_2-manifolds</i>, (with S. Goette and J. Nordström); arXiv:1505.02734 ◦ <i>Exotic G_2-manifolds</i>, (with J. Nordström); arXiv:1411.0656 |
| Conference talks | <p>AustMS Annual General Meeting, Topology Special Session, Macquarie, December 2017 Analysis and Topology in Interaction, Cortona, June 2017 Groups, manifolds and K-Theory: honouring Wolfgang Lück's 60th birthday, Münster, June 2017 Topology in Australia and South Korea, Melbourne, May 2017 The international conference in K-Theory, WSU, Sydney, August 2016 Topology of Manifolds: honouring Michael Weiss's 60th birthday, Lisbon, June 2016 Group Actions Workshop at The Fields Institute, Toronto, June 2016 Colloque 2015 du GDR Topologie Algébrique et Applications, Toulouse, October 2015 PIMS Symposium on Manifolds, University of British Columbia, Vancouver, July 2015</p> |
| Invited seminars | <p>I have spoken in topology and geometry seminars in the following institutions, listed by country: 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; USA: Princeton, University of Pennsylvania (twice), Penn State, Rutgers, Chicgo (twice), Detroit, UC San Diego, UC Riverside, Binghamton, Notre Dame (twice), IU Bloomington (4 times); Canada: McMaster (3 times), Waterloo; Australia: Sydney, Macquarie, Melbourne, Monash, Adelaide (3 times)</p> |
| International seminars and workshops | <p>Co-organiser: Gauge Theory and Higher Geometry, Adelaide, November-December 2017 Co-organiser: BIRS two day workshop on Surgery and Geometry, Banff, July 2016 Co-chair: PIMS Summer School on Surgery and the Classification of Manifolds, Calgary, July 2016 Speaker: Summer School on Surgery Theory and applications in Geometry, Münster, June 2014 Co-organiser: Summer School on the Topology of High Dimensional Manifolds, Bonn August 2013 Co-organiser: MFO Seminar on Surgery Theory, Oberwolfach, May & June 2012 Co-organiser: Summer School on the Topology of Manifolds, Budapest, August 2011</p> |
| Administration | <p>The University of Aberdeen SMSTC representative 2016</p> <p>The University of Melbourne MSc. co-ordinator 2018</p> |
| Teaching | <p>The University of Melbourne from 2017 Lecture series in the algebraic topology seminar, "Introduction to surgery", 1st Semester 2017 Ph.D. supervisor of C. Nagy</p> <p>The University of Aberdeen 2014-2016 Euclidean Geometry: introductory first year course Second year Engineering Mathematics Final year Algebraic Topology SMSTC Geometry and Topology - stream leader: Scotland-wide graduate course</p> |
| Research interests | <p>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.</p> |
| Professional Affiliations | <p>Member of the Australian Mathematical Society</p> |