

Curriculum Vitae for Danny Calegari

Personal Details

- Date of Birth: May 24, 1972
- Citizenship: US/Australian joint

Education

- May 2000: PhD from UC Berkeley (advisor: Andrew Casson)
- December 1994: BA degree with honors at the University of Melbourne

Research Interests

- Geometry, Dynamics and Topology in low dimensions
- Geometric group theory

Academic Positions

- 2012–: Professor of Mathematics, University of Chicago
- 2011–2012: University Professor (Chair) of Pure Mathematics, DPMMS University of Cambridge
- 2007–2012: Richard Merkin Distinguished Professor of Mathematics at California Institute of Technology
- 2006–2007: Professor at California Institute of Technology
- 2003–2006: Associate Professor at California Institute of Technology
- 2002: Assistant Professor at California Institute of Technology
- 2000–2002: Benjamin Peirce Assistant Professor at Harvard

Visiting Positions

- 2012 October–December: Visiting Professor at University of Chicago
- 2012 July–October: Distinguished Courant Visiting Professor at Georg-August-Universität Göttingen
- 2010 December: Visiting Professor at Institut Fourier Grenoble
- 2007 April–September: Visiting Professor at Tokyo Institute of Technology
- 2000 May–June: Visiting Researcher at UC Davis
- 2000: Consultant for Microsoft Research
- 1996–1997: Student member at the Mathematical Sciences Research Institute
- 1995 January–February: Research assistant at the University of Melbourne
- 1994 January–February: Research assistant at the University of Melbourne
- 1990 January: Research assistant at Comalco Research Laboratories

Fellowships/Prizes/Grants/Named lectures

- 2013: Blumenthal Lecturer, University of Tel Aviv
- 2012: AMS Fellow
- 2011–2016: Royal Society Wolfson Research Merit Award
- 2012: Namboodiri Lecturer, University of Chicago
- 2010–2013: NSF grant DMS 1005246
- 2009–2010: Clay Lecturer
- 2009: Clay Research Award, and Scholarship
- 2007–2010: NSF grant DMS 0707130
- 2004–2007: NSF grant DMS 0405491 (joint with N. Dunfield)
- 2003–2005: Sloan Research Fellow
- 2002: Awarded NSF Postdoctoral fellowship in mathematics (declined)
- 2000–2002: NSF–VIGRE grant recipient
- 2000: Clay Mathematical Institute Liftoff summer fellowship recipient
- 2000: Awarded NSF Postdoctoral fellowship in mathematics (declined)

- 1999–2000: Alfred P. Sloan dissertation fellowship in mathematics
- 1996–1999: NSF graduate fellowship in mathematics
- 1995–1996: Mary Stella Langford traveling fellowship (awarded by the University of Melbourne)
- 1995: A.O.Capell Scholarship (awarded by the University of Melbourne) for the best undergraduate degree in 1994
- 1994: Wyselaskie Scholarship and Nansen and Wilson prizes, awarded by the Mathematics department at the University of Melbourne for best undergraduate thesis
- 1991: Francis Frewin academic Scholarship

Teaching Experience

- 2012–: Taught graduate classes at the University of Chicago
- 2003–2012: Taught more than twenty classes at Caltech, both graduate level and undergraduate
- 2001–2002: Designed and taught two graduate topics classes on recent developments on the theory of foliations, and on geometrization, at Harvard
- 2001: (*with Nathan Dunfield*) organized a seminar on Thurston’s geometrization theorem for Haken manifolds, at Harvard
- 2000–2001: Designed and taught two upper–division classes on classical geometry and topology at Harvard
- before 2000: grader/TA for various classes at Berkeley

PhD students supervised

- 2006: Thomas Mack, *Quasiconvex subgroups and nets in hyperbolic groups*
- 2007: Roberto Pelayo, *Diameter bounds on the complex of minimal genus Seifert surfaces for hyperbolic knots*
- 2008: Rupert Venzke, *Braid forcing, hyperbolic geometry, and pseudo-Anosov sequences of low entropy*
- 2009: Dongping Zhuang, *A geometric study of commutator subgroups*
- 2011: Joel Louwsma, *Extremality of the Rotation Quasimorphism on the Modular Group*
- 2012: Alden Walker, *Surface maps into free groups*

Invited Conference Talks and Department Colloquia

- AMS international conference at Denton Texas, May 19–22 1999
- AMS international conference at Melbourne Australia, July 12–16 1999
- AMS conference at Austin Texas, October 8–10 1999
- Wasatch Topology conference at Park City, December 16–18 1999
- Texas Geometry and Topology Conference, February 25–27 2000
- AMS conference at UC Santa Barbara, March 11–12 2000
- Plenary talk at Foliations: Geometry and Dynamics. Conference at Stefan Banach Center in Warsaw, May 29–June 9 2000
- Lecture series at Tokyo Institute of Technology, September 1–10 2000
- pre-AMS-meeting mini-conference, Barnard College, November 3 2000
- Caltech Department Colloquium, January 16 2001
- Cornell Topology Festival, May 4–6 2001
- Georgia International Topology Conference, May 20–June 2 2001
- 3-manifold Topology Conference at CRM Montreal, June 25–29 2001
- AMS-SMF joint meeting, Ecole Normale Lyon, July 17–20 2001
- Minicourse at Foliations and Geometry 2001, Pontificia Univ. Catolica, Rio de Janeiro, August 2–11 2001
- Topology meeting at Oberwolfach, September 9–15 2001
- Princeton mathematics department lecture series, April 15–19 2002
- Plenary talk at Geometric Topology conference, Shaanxi Normal University China August 12–16 2002
- BATS, October 15 2002
- Wasatch topology conference at Salt Lake City, October 26–27 2002
- UBC Department Colloquium, November 22 2002
- Lecture series at Seoul National University, February 18–23 2003
- Arkansas Spring lecture series, April 10–12 2003
- Topology of Manifolds of dimensions three and four (60th Birthday conference for Andrew Casson) U. Texas Austin May 19–21 2003
- 60th Birthday conference for Jim Cannon, Park City Utah June 2003
- Conference on topology, plenary lecture series ANU Canberra July 14–25 2003
- UIC Department Colloquium, October 17 2003
- Trends in 3-manifolds conference at CIRGET Montreal, May 2 2004
- KOOK international conference, Awajijima Japan, July 8 2004
- Plenary talk at 48th annual meeting of the Australian Math. Soc., RMIT Melbourne September 28 2004
- University of Melbourne Department Colloquium, October 6 2004
- University of Chicago Department Colloquium, October 29 2004
- Ahlfors-Bers Colloquium plenary speaker, May 19–22 2005
- Rice University Department Colloquium, September 8 2005
- UCLA Department Colloquium, January 12 2006
- Manifolds in Melbourne Conference, January 17–20 2006
- Senior researcher for thematic program on Dynamics and Geometry at the Fields Institute, Toronto, Spring 2006
- MSU special RTG lecture, April 4 2006
- Georgia Topology Conference, May 17–21 2006
- Geometric group theory meeting at Oberwolfach, July 23–29 2006
- UC Riverside Department Colloquium, November 15 2006
- Lecture series at Dynamics Conference at Independent University of Moscow, February 19–23 2007
- Penn State Department Colloquium, March 1 2007
- Cornell Topology Conference, May 21–24 2007
- Paul Schweitzer's 70th birthday conference, PUC Rio de Janeiro, August 6–10 2007
- Ahlfors Centennial Celebration, University of Helsinki, August 20–24 2007

- Osaka Symposium on Intelligence of Low Dimensional Topology, August 29-September 1 2007
- Akita University, Topology and Computers Conference, September 5–7 2007
- Invited address at Fall annual meeting of the Japanese Mathematical Society, September 21–24 2007
- Encounter with Mathematics, Tokyo, September 28-29 2007
- Topics in Teichmuller Theory and Kleinian Groups, MSRI, November 12–16 2007
- USC Department Colloquium, January 23 2008
- Cornell Department Colloquium, February 7 2008
- Two talks at G3 conference, March 20–23 2008
- Wasatch topology conference, August 9–10 2008
- The 4th William Rowan Hamilton Geometry and Topology Workshop, August 28–30 2008
- Geometric group theory meeting at Oberwolfach, September 7–13 2008
- Lecture series at Paris École Polytechnique, March 30–31 2009
- Georgia International Topology Conference, May 18–29 2009
- 2009/10 Clay Lecturer Melbourne-Sydney-Canberra-Adelaide, July-October 2009
- SUNY Stony Brook Department Colloquium, September 1 2009
- SUNY Stony Brook workshop, September 2 2009
- Nevanlinna Colloquium Kyoto University, September 7–11 2009
- SUNY Buffalo Department Colloquium, October 16 2009
- Rice Texas Geometry and Topology Conference, November 6–8 2009
- UC Riverside AMS Sectional meeting, November 7–8 2009
- Minicourse at workshop in Geometric Group Theory, University of Queensland, December 14–18 2009
- Northwestern Department Colloquium, January 13 2010
- Plenary lecture at the 44th Spring Topology and Dynamics Conference, March 18–20 2010
- Talk at William Jaco’s 70th birthday conference, June 4–6 2010
- Geometric group theory meeting at Oberwolfach, July 11–17 2010
- Arkansas Department Colloquium, October 21 2010
- Trends in Dynamics, Northwestern, April 27–May 1 2011
- Plenary lecture at AMS western sectional meeting UNLV, April 30–May 1 2011
- Minicourse at Sao Paulo Topological Methods in Dynamical Systems, June 13–16 2011
- Columbia Walterfest plenary talk, June 6–10 2011
- Minicourse at Hyam Rubinstein’s 60th birthday conference and workshop, July 11–23 2011
- Minicourse at KAIST Geometric Group Theory Fair, August 8–12 2011
- Warwick Department Colloquium, November 11 2011
- Durham Department Colloquium, December 5 2011
- Immersed surfaces in 3-manifolds, Paris, March 27 2012
- Namboodiri lectures, University of Chicago, April 2012
- Minicourse at RIMS Geometry and Analysis on Discrete Groups, June 4–8 2012
- Sadayoshi Kojima’s 60th birthday conference, September 10–14 2012
- Technion special lecture series, January 14–18 2013
- Tel Aviv Blumenthal Lectures, January 21–23 2013
- Surface subgroups and cube complexes, MSRI, March 18–22 2013

Publications

Books

- (1) Foliations and the Geometry of 3-manifolds
research monograph 360pp; Oxford University Press, May 2007
- (2) scl
research monograph 220pp; MSJ Memoirs **20**, June 2009

Papers

Foliations/Laminations

- (1) \mathbb{R} -covered foliations of hyperbolic 3-manifolds.
Geom. Topol. **3** (1999), 137–153
- (2) Foliations transverse to triangulations of 3-manifolds.
Comm. Anal. Geom. **8** (2000), no. 1, 133–158
- (3) Geometry and topology of \mathbb{R} -covered foliations.
Electr. Res. Announc. Amer. Math. Soc. **6** (2000), 31–39
- (4) The Gromov norm and foliations.
Geom. Func. Anal. **10** (2000), no. 6, 1423–1447
- (5) The geometry of \mathbb{R} -covered foliations.
Geom. Topol. **4** (2000), 457–515
- (6) Leafwise smoothing laminations.
Algebr. Geom. Topol. **1** (2001), 579–585
- (7) Almost continuous extension for taut foliations.
Math. Res. Lett. **8** (2001), no. 5–6, 637–640
- (8) Distortion of leaves in product foliations.
Top. Appl. **124** (2002), no. 2, 205–209
- (9) Every orientable 3-manifold is a BΓ.
Algebr. Geom. Topol. **2** (2002), 433–447
- (10) Problems in foliations and laminations of 3-manifolds.
Proc. Symp. Pure Math. **71** (2003), 297–335
- (11) Foliations with one-sided branching.
Geom. Dedicata **96** (2003), 1–53
- (12) Laminations and groups of homeomorphisms of S^1 with N . Dunfield
Invent. Math. **152** (2003), no. 1, 149–204
- (13) Promoting essential laminations.
Invent. Math. **166** (2006), no. 3, 583–643

Dynamics

- (1) Circular groups, Planar groups, and the Euler class.
Geom. Topol. Mon **7**, (2004), 431–491
- (2) Dynamical forcing of circular groups.
Trans. Amer. Math. Soc. **358** (2006), no. 8, 3473–3491
- (3) Distortion in transformation groups with M . Freedman, appendix by Y . de Cornulier
Geom. Topol. **10** (2006), 267–293
- (4) Universal circles for quasigeodesic flows,
Geom. Topol. **10** (2006), 2271–2298
- (5) Denominator bounds in Thompson-like groups and flows,
Groups, Geom., Dyn. **1** (2007), no. 2, 101–109
- (6) Nonsmoothable, locally indicable group actions on the interval,
Algebr. Geom. Topol. **8** (2008), no. 1, 609–613
- (7) The Euler class of planar groups,
Contemp. Math. **498** (2009), 141–149

- (8) Ziggurats and rotation numbers *with A. Walker*
J. Mod. Dynamics **5** (2011), no. 4
- (9) The ergodic theory of hyperbolic groups,
Contemp. Math. to appear

Kleinian groups/3-manifolds

- (1) Strong geometric isolation in 3-orbifolds.
Bull. Austral. Math. Soc. **53** (1996), no. 2, 271–280
- (2) Napoleon in isolation.
Proc. Amer. Math. Soc. **129** (2001), no. 10, 3109–3119
- (3) Commensurability of 1-cusped hyperbolic 3-manifolds *with N. Dunfield*.
Trans. Amer. Math. Soc. **354** (2002), no. 7, 2955–2969
- (4) Shrinkwrapping and the taming of hyperbolic 3-manifolds *with D. Gabai*
Jour. Amer. Math. Soc. **19**, (2006) no. 2, 385–446
- (5) Real places and torus bundles,
Geom. Dedicata **118** (2006), no. 1, 209–227
- (6) An ascending HNN extension of a free group in $SL(2, \mathbb{C})$ *with N. Dunfield*
Proc. Amer. Math. Soc. **134** (2006), no. 11, 3131–3136
- (7) 3-manifold positivity and the topological Cauchy-Schwarz inequality,
Proc. Conf. Osaka City Univ (2007), 65–70
- (8) Positivity of the universal pairing in 3 dimensions *with M. Freedman and K. Walker*
Jour. Amer. Math. Soc. **23** (2010), no. 1, 107–188
- (9) Chimneys, leopard spots, and the identities of Basmajian and Bridgeman
Algebr. Geom. Topol. **10** (2010), no. 3, 1857–1863
- (10) Bridgeman’s orthospectrum identity
Topol. Proc. **38** (2011), 173–179
- (11) On fibered commensurability *with H. Sun and S. Wang*
Pacific J. Math. **250** (2011), no. 2, 287–317
- (12) Knots with small rational genus *with C. Gordon*
Comment. Math. Helv. **88** (2013), no. 1, 85–130

Stable commutator length/bounded cohomology

- (1) Stable commutator length in subgroups of $PL^+(I)$,
Pacific J. Math. **232** (2007), no. 3, 257–262
- (2) Length and stable length,
Geom. Func. Anal. **18** (2008), no. 1, 50–76
- (3) Word length in surface groups with characteristic generating sets,
Proc. Amer. Math. Soc. **136** (2008), no. 7, 2631–2637
- (4) Surface subgroups from homology,
Geom. Topol. **12** (2008), 1995–2007
- (5) What is . . . stable commutator length?
Notices Amer. Math. Soc. **55** (2008), no. 9, 1100–1101
- (6) Large scale geometry of commutator subgroups *with D. Zhuang*
Algebr. Geom. Topol. **8** (2008), no. 3, 2131–2146
- (7) Faces of the scl norm ball
Geom. Topol. **13** (2009), 1313–1336
- (8) Stable commutator length is rational in free groups,
Jour. Amer. Math. Soc. **22** (2009), no. 4, 941–961
- (9) Stable commutator length in word-hyperbolic groups *with K. Fujiwara*
Groups, Geom., Dyn. **4** (2010), no. 1, 59–90
- (10) Quasimorphisms and laws
Algebr. Geom. Topol. **10** (2010), no. 1, 215–217

- (11) Combable functions, quasimorphisms, and the central limit theorem *with K. Fujiwara*
Ergodic Theory Dyn. Systems **30** (2010), no. 5, 1343–1369
- (12) Scl, sails and surgery,
Jour. Topology **4** (2011), no. 2, 305–326
- (13) Immersed surfaces in the modular orbifold *with J. Louwsma*
Proc. Amer. Math. Soc. **139** (2011), 2295–2308
- (14) Stable W-length *with D. Zhuang*
Contemp. Math. **560** (2012), 145–170
- (15) Isometric endomorphisms of free groups *with A. Walker*
New York J. Math. **17** (2011), 713–743
- (16) Integer hulls of linear polyhedra and scl in families *with A. Walker*
Trans. Amer. Math. Soc. to appear
- (17) Certifying incompressibility of non-injective surfaces with scl
Pacific J. Math. to appear
- (18) Statistics and compression of scl *with J. Maher*
Ergodic Theory Dyn. Systems to appear

Miscellaneous

- (1) A degree one Borsuk–Ulam theorem.
Bull. Austral. Math. Soc. **61** (2000), no.2, 267–268

Papers in preparation or submission

- (1) Hyperbolic 3-manifolds, tameness and Ahlfors’ measure conjecture
lecture notes from minicourse at the IUM February 2007
- (2) Random rigidity in the free group *with A. Walker*
submitted preprint
- (3) Surface subgroups from linear programming *with A. Walker*
submitted preprint

Service

Editorial boards

- Compositio Mathematica 2011-
- Geometry and Topology 2009-
- Journal of Topology and Analysis 2008-
- Notices of the AMS (Associate Editor) 2013-

Reviewing/refereeing activity

- Reviewer for Math. Reviews, NSF, NSERC, Georgian–U.S. BGP
- Referee for
 - Acta Mathematica
 - Advances in Geometry
 - Algebraic and Geometric Topology
 - American Journal of Mathematics
 - Annals of Mathematics
 - Commentarii Mathematici Helvetici
 - Communications in Analysis and Geometry
 - ENS Publications Math.
 - Experimental Mathematics
 - Geometry and Topology
 - Inventiones Mathematicae
 - Journal of the AMS
 - Journal of the Australian MS
 - Journal of the LMS
 - Journal of Differential Geometry
 - Knot Theory and its Ramifications
 - Mathematische Annalen
 - Mathematische Zeitschrift
 - Pacific Journal of Mathematics
 - Topology
 - Transactions of the AMS
 - Transformation groups
 - University of Chicago Monograph series
- Good knowledge of C, C++, L^AT_EX, HTML, and fundamentals of UNIX (including Mac OSX) and Linux

Conferences Organized

- 2003 Southern California Topology Conference, Caltech
- 2004 (with N. Dunfield) Southern California Topology Conference, Caltech
- 2005 Complex of curves fest, Caltech
- 2007 Southern California Topology Conference, Caltech
- 2009 Southern California Topology Conference, Caltech
- 2011 (with several people) Topological Methods in Dynamical Systems, Sao Paulo
- 2011 (with several people) Hyam Rubinstein's 60th birthday conference and workshop, Melbourne
- 2013 (with several people) Topology, geometry and group theory, informed by experiment, Brown
- 2013 (with several people) Surface subgroups and cube complexes, MSRI

Mathematical Weblog

- Blog *Geometry and the Imagination* (url: <http://lamington.wordpress.com>)

References:

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