

Gunnar E. Carlsson

CURRICULUM VITAE

Birthdate: August 22, 1952
Birthplace: Stockholm, Sweden

EDUCATION

B.A. Harvard University 1973
Ph.D. Stanford University 1976

POSITION

1970-72	Assistant Programmer	Univ. of California, San Francisco (Summers)
1976-78	L. E. Dickson Instructor	Univ. of Chicago
1978-1981	Assistant Professor	Univ. of California, San Diego
1981-1983	Associate Professor	Univ. of California, San Diego
1983-1986	Professor	Univ. of California, San Diego
1983-1984	Visiting Assoc. Professor	Princeton University
1986-1991	Professor	Princeton University
1991-	Professor	Stanford University

MEMBERSHIPS

1973 American Mathematical Society
1982 Reviewer for Mathematical Reviews

CONFERENCE ORGANIZATION

1986 Member, Organizing committee, International Symposium on Algebraic Topology, Arcata California

1989 Member, Organizing Committee, year long program in Algebraic Topology, MSRI, Berkeley, California

1998-99 Member of Organizing Committee for Symposium on Topology, Geometry, and Algebra: Interactions and New Directions. Held at Stanford University, August, 1999.

2000 Organizer, Workshop in Equivariant Homotopy Theory, held at Stanford University,

2001 Co-organizer, Conference on Algebraic Topological Methods in Computer Science, Stanford University.

2002 Member, Board of Trustees, American Institute of Mathematics..

2003 Co-organizer, Banff International Research Station meeting on high dimensional manifold theory, held March 20-25 2004

2003-2004 Co-organizer, Workshop on Dessins d'enfants and motivic homotopy theory, held at the American Institute of Mathematics, Palo Alto, April 23-26, 2004

2004 Co-organizer, Conference on Algebraic Topological Methods in Computer Science, University of Western Ontario, July 2004

2004 Co-organizer, Hot Topics Workshop on high dimensional data analysis, Mathematical Sciences Research Institute, Berkeley, California

2005-2006 Co-organizer, Semester program in applications of algebraic topology, Mathematical Sciences Research Institute, Berkeley, California (took place fall 2006)

2005- 2007 Co-organizer, Thematic program on geometric applications of homotopy theory, Fields Institute, Toronto, Canada (to take place Spring 2007)

2007-2008 Co-organizer, Workshop on Modern Massive Data Sets, Stanford, California, held in June 2008
 2007-2008 Co-organizer, Oberwolfach program on computational topology June-July 2008
 2008- Co-organizer, ATMCS III conference, Paris. July 2008.
 2008-2009 Co-organizer, meeting on geometric methods in Statistics, Banff International Research Station, February, 2009
 2009- Co-organizer, ATMCS IV conference, Münster, Germany, June, 2010
 2009- Co-organizer, Workshop on Modern Massive Data Sets, Stanford, California, held in June 2010
 2010-2011 Co-organizer, AMS workshop in computational topology, Snowbird, Utah.
 2010- Co-organizer, ATMCS V conference, Edinburgh, UK., June, 2012
 2010- Co-organizer, year long program in applied and computational topology, IMA, Minneapolis, MN, to be held 2013-2014.

COMMITTEES AND ADMINISTRATIVE WORK

1979-1988	Muir College Executive Committee	Univ. of California, San Diego
1980	Teaching Asst. Dev. Advisory Committee	Univ. of California, San Diego
1981-1986	Graduate Admission Committee	Univ. of California, San Diego
1979-1982	Teaching Assistant Training Supervisor	Univ. of California, San Diego
1984-1986	Graduate Advisor	Univ. of California, San Diego
1984-1986	Mathematics Department Council	Univ. of California, San Diego
1992-1995	Director of Graduate Studies	Dept. of Mathematics, Stanford University
1995-1998	Chairman	Dept. of Mathematics, Stanford University
1998-	Member, Appointments Committee	Dept. of Mathematics, Stanford University
2001-2004	Member, Committee on Undergraduate Studies	Stanford University
2002-2004	Member, Dean's Committee on Curriculum	Stanford University
2003-2007	Member, Academic Senate	Stanford University
2004-2006	Member, Dean's Advisory Committee on A&P	Stanford University
2005-2006	Steering Committee for the Academic Senate	Stanford University

COMMUNITY SERVICE

1994-1995	Superintendents Advisory Committee	Palo Alto Unified School District
1995-1996	K-12 Standards Committee	Palo Alto Unified School District
1996	Middle School Textbook Committee	Palo Alto Unified School District
1996-1997	Consultant to the Texas State Board of Education, concerning Content Standards in Mathematics.	
1997	Consultant to the California State Board of Education, concerning Content Standards in K-12 Mathematics.	
1999	Member of a Content Review Panel for K-8 mathematics materials, for the California State Board of Education	
1999	Supervision and development of a Staff development project for K-12 teachers, August, 1999, Thacher School, Ojai, California.	
2002	National Science Panel on Topology grant funding	
2005-	Member, Texas Instruments California Advisory Board on K-12 education	

AWARDS & GRANTS HELD

1977 -	NSF Grants (Summers)
1983-1987	Alfred P. Sloan Fellowship
Jan '83/Aug '83	Naval Oceans Systems Center Grant (NOSC), "Algebraic theory for Systolic Array Processors"
1999	Grant for support of Conference on Topology, Geometry, and Algebra: Interactions and New Directions., NSF
2000	Grant for support of Workshop on Equivariant Homotopy Theory, NSF

2001	Grant for support of Conference on Algebraic Topological Methods in Computer Science, NSF
2001-2004	Focused Research Group Grant in Mathematical Sciences, joint with P. Diaconis, S. Holmes, J. Tenenbaum, NSF
2002-2005	CARGO grant, joint with L. Guibas (Computer Science) and T.Dey (Computer Science, Ohio State), NSF
2004-2008	Research Group Grant in Mathematical Sciences, join with P.Diaconis, S. Holmes, and L. Guibas
2004 -2005	DARPA “Seedling award”, Algebraic topology in the study of high dimensional data sets and shape recognition.
2005-2009	DARPA grant entitled “Topological methods for the analysis of high dimensional data sets and 3D object recognition”, w. various collaborators at Stanford and at Duke, Rice, and University of Minnesota.
2006-2009	Participant, DARPA Neovision 2 project
2008-2011	PI, Office of Naval Research grant entitled “Topological Road Maps for Point Cloud Data”
2008-2012	PI, Office of Naval Research grant entitled “Metric Geometry and Category Theory for Data Fusion”
2008-2011	PI, Air Force Office of Scientific Research grant entitled “Geometric Network Analysis”
2009-2014	PI, Air Force Office of Scientific Research grant entitled “Topological Methods for Data Fusion”.

EDITORSHIPS

Jan 1988 -Jan 1998	Editor of Matematische Zeitschrift
November 1988 - January 1994-	Editor of K-theory
July 1996 – July 2006	Editor of Mathematical Research Letters
August 2000-	Editor of Geometry and Topology
June 2009-	Editor in Chief of Homology, Homotopy, and Applications
January 2012-	Editor, New York Journal of Mathematics Editor, Journal of the Foundations of Computational Mathematics

VISITING POSITIONS

Sept-Dec 1989	Member, Mathematical Sciences Research Institute
Jan.-June 1990	Visiting Professor, University of California, San Diego
May-June, 1991	Ordway Visiting Professor, University of Minnesota
Aug.-Dec., 2006	Member, Mathematical Sciences Research Institute

INVITED LECTURES

- March 1977 - Conference on Geometric Applications on Homotopy Theory, Northwestern Univ. “Computations of Odd L -Groups”, Plenary lecture.
- January 1978 - Midwest Topology Seminar, Northwestern Univ. “The Witt Group of a 2-adic Group Ring.”
- June 1978 - Conference on Algebraic Topology, Univ. of Waterloo, Ontario. “Equivariant Embeddings in Homotopy Spheres.”
- August 1978 - Symposium on Algebraic Topology, Aarhus Univ., Denmark. “Desuspension in the Symmetric L -groups.”
- 1979 Colloquium - University of California, San Diego.
- June 1979 - Conference on L -Theory, Bielfeld, W. Germany. “Wu Invariants of Hermitian forms.”

October 1979 - Western Ontario Topology Seminar, McMaster Univ., Hamilton, Ontario. "Finite Group Actions on Products of Spheres."

March 1982 - Conference on Homotopy Theory, Northwestern Univ. "Some Remarks on Segal's Burnside Ring Conjecture," Plenary lecture.

June 1982 - Annual Summer Meeting, Canadian Mathematical Society, Carleton Univ., Ottawa, Ontario. "Segal's Burnside Ring Conjecture."

August 1982 - Symposium on Algebraic Topology, Aarhus Univ., Denmark. "Segal's Burnside Ring Conjecture."

August 1982 - Conference on Transformation Groups, Oberwolfach, W. Germany. "On the Homology of Finite Free $(\mathbb{Z}/2)^n$ Complexes."

1983 Colloquium - Massachusetts Institute of Technology.

1984 Colloquium - Fordham University.

1984 Colloquium - Lehigh University.

January 1984 - American Mathematics Society Annual Meeting, Louisville, Kentucky. Invited Address, "Segal's Burnside Ring Conjecture".

May 1984 - Midwest Topology Seminar, Detroit, Michigan.

June 1985 - Series of two invited lectures. A.M.S. Conference on Brown-Gitler Spectra, Arcata, California.

July 1985 - Series of three invited lectures. London Mathematical Society Symposium on Homotopy Theory, Durham, England.

1975-1985 Numerous lectures, Southern California Topology Seminar.

1975-1985 Occasional lectures, Berkeley-Stanford Topology Seminar.

March 1985 - West Coast Topology Symposium.

August 1986 - 45 minute invited address, International Congress of Mathematicians, Berkeley.

October 1986 - Upstate New York Topology Seminar, Syracuse University.

February 1987 - Colloquium Lecture, Dartmouth University.

May 1987 - Cornell Topology Festival, Cornell University.

January 1988 - Colloquium Lecture, Yale University.

March 1988 - Colloquium Lecture, Johns Hopkins University.

March 1988 - Series of two plenary lectures, International Symposium on Algebraic Topology, Northwestern University.

May 1988 - Series of three invited lectures, University of Notre Dame.

June 1988 - Invited Lecture, Symposium on Homotopy Theory, Cortona, Italy.

May 1989 - Invited Lecture, MSRI Workshop on Algebraic K -Theory, Berkeley, CA.

Nov. 1989 - Invited Lecture, Joint AMA-MAA Meeting.

Dec. 1989 - Colloquium, Sacramento State University.

July 1990 - Invited Lecture, Adams Memorial Symposium, Manchester, England,.

Feb. 1991 - Colloquium, State University of New York, Stony Brook.

Dec. 1991 - Invited Lecture, NATO Workshop on Algebraic K -Theory, Lake Louise, Alberta.

May 1992 - Invited Lecture, Cascades Topology Seminar.

Sept. 1992 - Invited Lecture, International Symposium on Homotopy Theory, Gargnano, Italy.

May 1993 - Cornell Topology Festival, Cornell University.

April - May 1994 - Participant, Program in Algebraic Topology, Institut Mittag-Leffler, Djursholm, Sweden.

May 1994 - Colloquium Lecture, University of Edinburgh.

May 1994 - Colloquium Lecture, Cambridge University.

May 1994 - Colloquium Lecture, University of Warwick.

May 1995 - Colloquium Lecture, University of Chicago.

May 1995 - Invited Lecture, Southwest Topology Conference, Albuquerque, NM.

October 1995 - Plenary Speaker, Conference in honor of W. C. Hsiang, Princeton, NJ.

July 1996 - Invited Lecture, AMS summer conference on group cohomology, Seattle, Washington.

August 1997 - Invited Lecture, AMS summer conference on Algebraic K-theory, Seattle, Washington.

August 1998 - Lecture, International Symposium on Topology and Geometry, Aarhus, Denmark.

October 1999 - Invited Lecture, Institute for Advanced Study, Princeton, New Jersey

August 1999 - Plenary Lecture, Conference on Topology, Geometry, and Algebra, Stanford University

February 2000 - Invited Lecture, Midwest Topology Seminar, University of Chicago, Chicago, Illinois

July 2000 - Plenary Lecture, Conference on Arithmetic Geometry and K-theory, Toulouse, France.

August 2000 - Lecture, Workshop on Equivariant Homotopy Theory, Stanford University

February 2001 - Joint Harvard-MIT-Brandeis Colloquium Lecture, Cambridge, Mass.

July 2001 - Plenary Lecture, International Conference on Algebraic Topology, Isle of Skye, U.K.

October 2001 - Colloquium Lecture, University of Western Ontario, London, Ontario

October 2001 - Invited Lecture, Ontario Topology Seminar, London, Ontario

November 2001 - Lecture, Workshop on Computational Methods in Topology, Society for Industrial and Applied Mathematics, Sacramento, California

November, 2001 - Invited Lecture, Conference on Recent Developments in Mathematics, Harvard University

January, 2002 - Invited Lecture, National Science Foundation

February, 2002 - Colloquium Lecture, University of Virginia

February, 2002 - Colloquium Lecture, University of Wisconsin.

June, 2002 - Invited Lecture, International Conference on Topology and Geometry, Aarhus University, Denmark

September, 2002 - Two Invited Lectures, program on axiomatic, enriched and motivic homotopy theory, Newton Institute, Cambridge, England

January, 2003 - Seminar talk, Commutative algebra seminar, U.C. Berkeley.

May, 2003 - Two invited talks, University of Chicago.

August 2003 - Plenary lecture, International Conference on Transformation Groups in honor of Soren Illman, Helsinki, Finland.

September 2003 - 5 lecture course, month long program on homotopy theory, University of Western Ontario.

September 2003 - Invited lecture, Conference on homotopy theory, University of Western Ontario.

October, 2003 - Lecture, special session on structured homotopy theory, AMS meeting, Boulder, Colorado.

November, 2003 - Colloquium Lecture, University of Oregon.

November, 2003 - Invited Lecture, Cascades Topology Conference.

January, 2004 – Commutative algebra seminar, U.C. Berkeley

February, 2004 – Colloquium Lecture, U. C. San Diego.

February, 2004 – Seminar talk, U.C. San Diego.

April, 2004 - Lecture, SIAM meeting on Imaging science, Workshop on High dimensional point cloud data.

May, 2004 – Invited Lecture, Great Lakes K-theory Conference, University of Illinois, Urbana-Champaign

May, 2004 – Topology Seminar, University of Illinois, Urbana Champaign

July, 2004 – Invited Lecture, International Meeting on Geometry, Topology, and Combinatorics, Stockholm, Sweden

July, 2004 – Plenary talk, Conference on Algebraic Topological Methods in Computer Science, London, Ontario.

October, 2004 – Invited lecture, International Symposium on Algebraic K-theory, University of Montreal.

November, 2004 – Topology/Geometry Seminar, University of Texas, Austin.

December, 2004 – Two lectures, Hot Topics Seminar on high dimensional data analysis, Mathematical Sciences Research Institute, Berkeley, California.

August 2005 – Invited Lecture, Conference on Combinatorics and Simplicial Complexes, San Francisco State University

August 2005 – Invited Lecture, Symposium on Structured Ring Spectra, Rosendal, Norway

October 2005 – Applied Mathematics Colloquium, Princeton University

October 2005 – Colloquium Lecture, University of California, Santa Cruz

February 2006 - Distinguished Lecture, University of Ottawa

April 2006 – Member, Mittag-Leffler Institute, Djursholm, Sweden

April 2006 – Colloquium Lecture, KTH, Stockholm, Sweden

May 2006 – Cornell Topology Festival, 2 lectures, Ithaca, N.Y.

June 2006- Lecture, Yahoo-Stanford Symposium on Massive Data Sets

July 2006 – Lecture Series for Graduate Students (10 lectures), Mississippi State University

September 2006 – Lecture, MSRI Introductory Workshop on Applications of Algebraic Topology

September 2006 – Lecture, MSRI Workshop on Applications of Algebraic Topology in Science and Engineering

October 2006 – Lecture, MSRI Workshop on Applications of Algebraic Topology in Combinatorics and Computer Science

October 2006 – Workshop on High Dimensional Data, Harvard University

December 2006 – Workshop on Image Processing, University of Bergen, Norway.

January 2007 – Colloquium, Department of Mathematics, University of Arizona

April 2007 – Invited Lecture, PIMS, Vancouver B.C.

May 2007 – Colloquium, Department of Mathematics, University of California, Davis

September 2007 – Lecture, Oberwolfach workshop on homotopy theory

October 2007 – Lecture, Toyota Institute, University of Chicago

January 2008 – Invited lecture, MSRI 25th anniversary conference, Berkeley, California.

March 2008 - Lecture, workshop on algebraic statistics, spin models, and learning theory, Banbury Center, Cold Spring Harbor Laboratories.

April, 2008 – Colloquium talk, Ohio State University

June 2008- Tutorial lecture, Yahoo-Stanford Symposium on Massive Data Sets
July 2008 – Lecture, Oberwolfach workshop on computational topology
July 2008- Speaker, minisymposium on computational topology, European Congress of Mathematicians.
September 2008 – Colloquium talk, Vanderbilt University
October 2008 – Applied Mathematics Colloquium, University of Southern California
October 2008 – Invited talk, Workshop on Manifold Learning, IMA, Minneapolis
November 2008 – Mathematics and Statistics Colloquium, Portland State University
November 2008 – Invited talk, Cascades topology conference, Portland, Oregon.
February 2009 – Colloquium, Santa Clara University

February 2009 – Lecture in symposium “The mathematical twists and turns of data”, AAAS annual meeting, Chicago, Illinois
March 2009- Lecture, International Federation of Classification Society 2009, Dresden, Germany
March 2009 – Invited lecture, Meeting on Data Analysis using computational topology and geometric statistics, Banff International Research Station, Canada
April 2009 – Public Lecture, “Topology and Data”, Florida State University
April 2009 - Mathematics and Statistics Colloquium, Florida State University
June 2009 – Invited lecture, International Symposium on Topology and Geometry, Münster, Germany
June 2009 – Invited lecture, Lehigh University Geometry/Topology Conference, Bethlehem, Pennsylvania
June 2009 – Two week short course on applied topology, (10 lectures), IMA, Minneapolis, Minnesota
July 2009 – Invited lecture, European conference on modern massive data sets, Copenhagen, Denmark
July 2009 – One week short course on applied topology, (5 lectures), National University of Ireland, Galway, Ireland
October 2009 – Colloquium, University of Minnesota
October 2009 – Two talks, University of Texas at Austin, Geometry seminar.
November 2009 – Computational topology seminar, Institute for Advanced Study, Princeton, N.J.
November 2009 – Two invited talks, Simons systems biology center, Institute for Advanced Study, Princeton, N.J.
December, 2009- Topology Seminar, University of Chicago
January 2010- Invited talk, special session on mathematics in biology, AMS annual meeting, San Francisco
April 2010- Invited talk, Institute for Defense Analysis, Princeton, N.J.
June 2010 – Invited talk, ATMCS 2010, Münster, Germany
June 2010- Colloquium, University of Münster, Germany
June 2010 – Invited Public Lecture, Haus der Wissenschaft, Bremen, Germany
June 2010 - Colloquium, University of Bremen, Germany
August 2010- Invited talk, International Conference on Cognition, Beijing, China
September 2010- Invited lecture, Heilbronn Symposium, University of Bristol, U.K.
January 2011 – Invited lecture, AMS short course in applied and computational topology, AMS/SIAM/MAA joint meeting, New Orleans.

March 2011 – Potter Lecture, University of Aberdeen.

March 2011- Whittaker Colloquium, University of Edinburgh.

March 2011 – Rademacher Lectures, (4 lectures), University of Pennsylvania.

April 2011 – Two distinguished lectures, University of Western Ontario

July 2011 – Invited Lecture, Symposium on Applied Algebraic Topology, ETH, Zürich, Switzerland

July 2011 - Invited Lecture, Foundations of Computational Mathematics Symposium, Budapest, Hungary

August 2011 - Invited Lecture, Annual meeting, German Classification Society, Frankfurt, Germany

December 2011 - Invited Lecture, Memorial conference in honor of Partha Niyogi, University of Chicago.

January 2012 – Invited Lecture, AAAS annual meeting, special session on Analogy in Applications of Mathematics and Statistics to Other Disciplines

February 2012 – Invited talk, Banff International Research Station meeting on equivariant methods in homotopy theory, Banff, Alberta.

March 2012 – Institute for Mathematics and its Applications Workshop on Machine Learning, Invited lecture, Minneapolis.

April 2012 – Invited talk, Midwest topology seminar, West Lafayette, Indiana.

May 2012 – Panelist, Accel Partners Big Data meeting.

July 2012 – Invited plenary address, SIAM Annual Meeting, Minneapolis, “The Shape of Data”

August 2012 – Invited lecture, Arolla meeting on algebraic topology, Arolla, Switzerland

September 2012 – Keynote lecture, Inaugural meeting, Initiative for Mathematics and Computation, University of Illinois, Urbana

BIBLIOGRAPHICAL INFORMATION

A.1. Publications

1. Operations in connective K -theory and associated cohomology theories, Dissertation, Stanford, 1976.
2. “An Adams-type spectral sequence for change of rings”, *Houston Journal of Mathematics*, **4** (1978).
3. (with R. J. Milgram) “Torsion Witt rings for orders and finite groups”, *Proceedings of Symposium on Algebraic Topology*, Evanston, Springer Lecture Notes #657.
4. (with R. J. Milgram) “The structure of odd L -groups”, *Proceedings of Conference on Algebraic Topology*, Waterloo, Springer Lecture Notes #741, 1978.
5. “Desuspension in the symmetric L -groups”, *Proceedings of Conference on Algebraic Topology*, Aarhus, Springer Lecture Notes #763, (1978).

6. (with R. J. Milgram) "Some exact sequences in the theory of Hermitian forms", *Journal of Pure and Applied Algebra*, **18** (1980), 233-252.
7. "On the Witt group of a 2-adic group ring", *Quarterly Journal of Mathematics*, **31**, No. 123 (1980).
8. "On the stable splitting of $bo \wedge bo$ and torsion operations in connective K -theory", *Pacific Journal of Mathematics*, **87**, No. 2 (1980).
9. "On singular loci of finite group actions on spheres and Poincare duality spaces", preprint.
10. "Wu invariants of Hermitian forms", *Journal of Algebra*, **65**, No. 1, (1980).
11. "Non-existence of free actions of elementary abelian groups on products of spheres", *American Journal of Mathematics*, **102** (1980).
12. "Some restrictions on finite groups acting freely on $(S^n)^k$ ", *Trans. American Mathematical Society*, **264**, No. 2 (1981).
13. "A counterexample to a conjecture of Steenrod", *Inventiones Mathematicae*, **64**, (1981) pp. 171-174.
14. "On the rank of abelian groups acting freely on $(S^n)^k$ ", *Inventiones Mathematicae*, **69**, (1982), pp. 393-400.
15. (with R. J. Milgram) "The oriented odd L -groups of finite groups", preprint.
16. "On G. B. Segal's Burnside ring conjecture for $(Z/2)^k$ ", *Topology*, **22**, No. 1, 1983, pp. 83-103.
17. "On the homology of finite free $(Z/2)^n$ -complexes", *Inventiones Mathematicae*, **74**, 1983, pp. 139-147.
18. "A simplicial group construction for balanced products", *Topology*, **23**, No. 1, 1984, pp. 85-89.
19. "Equivariant stable homotopy and Segal's Burnside ring conjecture", *Annals of Mathematics*, **120**, 1984, pp. 189-224.
20. (with J. E. Cruthirds, H. B. Sexton, and C. G. Wright) "Interconnection networks based on a generalization of the cube connected cycles", *I.E.E.E. Transactions on Computers*, **C-34**, No. 8, 1985, pp. 769-772.
21. "Free $(Z/2)^k$ -actions and a problem in commutative algebra", *Proceedings of Symposium in Transformation groups*, Poznan, Poland, 1985, 79-83.
22. "Segal's Burnside ring conjecture and related problems in topology", *Proceedings of the 1986 International Congress of Mathematicians*, Berkeley, CA, 1987, pp. 574-579.
23. "Equivariant stable homotopy and Sullivan's conjecture", *Inventiones Mathematicae*, **103**, Fasc. 3, 1991, pp. 497-526.
24. (with R. L. Cohen, T. Goodwillie, and W-C Hsiang) "The free loop space and the algebraic K -theory of spaces", *K-theory*, **1**, No. 1, 1987, pp. 53-82.
25. "Free $(Z/2)^3$ -actions on finite complexes", *Algebraic Topology, K-theory*, Annals of Mathematical Studies #113, 1987, edited by W. Browder.
26. (with R. L. Cohen) "The cyclic groups and the free loop space", *Comm. Mathematica Helvetici*, **62**, 1987, pp. 423-449.
27. "Segal's Burnside ring conjecture and homotopy limit problem", in *Homotopy Theory*, edited by E. Rees and J. D. S. Jones, London Mathematical Society Lecture Notes #117, 1987, pp. 6-34.
28. "Equivariant stable homotopy and the descent problem in unstable Algebraic K -theory", *American Journal of Mathematics*, **113**, 1991, pp. 963-973
29. "Dense symmetric networks from linear groups and codes", joint with L. Campbell, V. Faber, M. Fellows, M. Langston, J. Moore, A. Mullhaupt, and H. Sexton, *I.E.E.E. Transactions on Computers*, **41**, No. 2, 1992 pp. 218-221.
30. "On the homotopy fixed point problem for free loop spaces and other function complexes", *K-theory*, **4**, 1991, pp. 339-361.

31. "Bounded K -theory and the assembly map in algebraic K -theory I", appears in *Novikov Conjectures, Index Theorems, and Rigidity*, Proceedings of 1993 Oberwolfach Conference on the Novikov Conjectures, edited by S. Ferry, A. Ranicki and J. Rosenberg, London Mathematical Society Lecture Notes #227, Cambridge University Press, 1995. pp. 5-127
32. "Homotopy fixed points in the algebraic K -theory of certain infinite discrete groups", appears in *Advances in Homotopy Theory*, edited by S. M. Salamon, B. Steer, and W. A. Sutherland, London Mathematical Society Lecture Note Series, **139**, pp. 5-10.
33. "Algebraic K -theory of simply connected spaces I, the p -complete case", with M. Bökstedt, R. Cohen, J. Goodwillie, W-C Hsiang, F. Waldhausen, *Duke Math. Journal*, **Vol. 84, No. 3**, Sept. 1996, pp. 541-563
34. Proceedings of the Arcata Symposium on Algebraic Topology (1986), Springer Lecture Notes in Mathematics, **1370**, 1989, edited with R. Cohen, H. Miller, and D. Ravenel.
35. "A survey of equivariant stable homotopy theory", *Topology*, **31, No. 1**, 1992, pp. 1-27.
36. "Proper homotopy theory and transfers for infinite groups", *Algebraic Topology and its Applications*, Mathematical Sciences Research Institute Publications, **27**, 1993, Springer Verlag.
37. "Controlled algebra and the Novikov conjectures for K and L -theory", joint with E. K. Pedersen, *Topology*, **Vol. 34. No. 3**, 1993, pp 731-758.
38. "On the algebraic K -theory of infinite product categories", *K-theory*, **9**, 1995, pp 305-322.
39. "Continuously controlled algebraic K -theory of spaces and the Novikov conjecture", joint with E. K. Pedersen and W. Vogell, *Math. Annalen* (**310**), 1998, No. 1, 169-182
40. "Cech homology and the Novikov conjecture for K and L -theory", joint with E. K. Pedersen, *Math. Scand* **82**, 1998, no. 1, 5-47.
41. "Stable homotopy and iterated loop spaces", joint with R. J. Milgram, *Handbook of Algebraic Topology*, edited by I. M. James, Elsevier Sciences, 1995.
42. "Inverse limits as constraint problems", Technical report, Kestrel Institute, 1997.
43. "Controlled Algebraic G -theory", joint with B. Goldfarb, *Journal of Homotopy and Related Structures*, 2011.
44. **A Mathematics Source Book for Elementary and Middle School Teachers: Key Concepts, Teaching Tips, and Learning Pitfalls**, with C. Barnett, D. Coggins, B. Honig, and D. Kraven. Bay Area Mathematics Task Force Report, supported by the University-School Support for Education Reform.
45. **Topics in Algebra**, joint with R.L.Cohen, 1999.
46. "Admissible Control and Power Control for Ad Hoc Wireless Networks via Random Graphs", joint with M. Chiang, International Symposium of Information Theory, June, 2001, IEEE.
47. "LORA: Robust and Simple Routing Algorithms for Wireless Mobile Ad Hoc Networks", joint with M. Chiang, to appear, Conference Proceedings, Globecom 2001.
48. *Topology, Geometry, and Algebra: Interactions and New Directions*, proceeding of a conference on Algebraic Topology in Honor of R.J. Milgram, contemporary Mathematics, vol 279, American Mathematical Society, 2001 (edited with A. Adem and R.L. Cohen)
49. "On Jim Milgram's mathematical work", appears in *Topology, Geometry, and Algebra: Interactions and New Directions*, proceedings of a conference on Algebraic Topology in Honor of R.J. Milgram, Contemporary Mathematics, vol. 279, American Mathematical Society, 2001, 1-10.
50. "Recent Developments in Higher Algebraic K -theory", Proceedings of Conference on Recent Developments in Mathematics at Harvard University, International Press, 2002.
51. "A geometric approach to sparse matrix problems", joint with V. de Silva, *Advances in Applied Mathematics*, 2004.
52. "An algebraic topological method for feature identification". joint with E. Carlsson and V. de Silva, *International Journal of Computational Geometry and Applications.*, 2006.

53. "Structured stable homotopy theory and the descent problem in the algebraic K-theory of fields", (preprint) 2003.
54. "Persistence barcodes for curve point cloud data", with A. Collins, L. Guibas, and A. Zomorodian, Symposium on Point Based Graphics, ETH, Zurich, Switzerland, June 2-4, 2004
55. "Persistence barcodes for shapes", with A. Collins, L. Guibas, and A. Zomorodian. Symposium on Geometry Processing, Nice, France, July 8-10,2004.
56. "Persistence barcodes for curve point cloud data", with A. Collins, L. Guibas, and A. Zomorodian, Computers and Graphics, 2004.
57. **The What, Where, and Why of Mathematics: a Handbook for Teachers**, joint with R.L.Cohen, 2001.
58. "Computing persistent homology", joint with A. Zomorodian, Symposium on Computational Geometry (SoCG) Brooklyn, N.Y., June 9-11, 2004.
59. "Computing persistent homology", joint with A. Zomorodian, Journal of Discrete and Computational Geometry, 2004.
60. "Topological approximation by small simplicial complexes", joint with V. de Silva. Submitted to Computational Geometry, 2003.
61. "Topological estimation using witness complexes", joint with V. de Silva, Symposium on Point Based Graphics, ETH, Zurich, Switzerland, June 2-4, 2004.
62. "The integral K-theoretic Novikov conjecture for groups with finite asymptotic dimension", joint with B. Goldfarb, Inventiones Mathematicae, 2004.
63. "On homological coherence of discrete groups", joint with B. Goldfarb, Journal of Algebra, 2004.
64. "Derived completions in homotopy theory", Journal of Pure and Applied Algebra, 2007 (arXiv 0707.2585).
65. "Localized homology", joint with A. Zomorodian, Shape Modeling International 2007, Lyon, France
66. "The theory of multidimensional persistence", joint with A. Zomorodian, Symposium on Computational Geometry (SoCG) Gyeongju, South Korea, June 6-8, 2007.
67. "Persistence barcodes for shapes", joint with A.Zomorodian, A. Collins, and L.J. Guibas, International Journal of Shape Modeling, Volume 11, no. 2, December 2005
68. "On the local behavior of spaces of natural images", joint with T. Ishkhanov, V. de Silva, and A. Zomorodian, International Journal of Computer Vision, (76), 1, 2008, pp. 1-12.
69. "Covering Homology", joint with M. Brun and Bjørn Dundas, Advances in Mathematics, 2010.
70. "Topological Structure of Population Activity in Primary Visual Cortex", joint with G. Singh, F. Memoli, T. Ishkhanov, G. Sapiro and D. Ringach, Journal of Vision, Volume 8, Number 8, Article 11, pp. 1-18, 2008.
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72. "Topological methods for the analysis of high dimensional data sets and 3D object recognition", joint with G. Singh and F. Memoli, Point Based Graphics 2007, Prague, September 2007.
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