

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
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- 2015	Professor	Stanford University
2015-	Professor Emeritus	Stanford University
2008-	Founder	Ayasdi Inc.
2014-2019	President and Chief Scientific Officer	Ayasdi Inc.
2019-	Founder	UnBox AI

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 Internation 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
2010-2013	Co-organizer, year long program in applied and computational topology, IMA, Minneapolis, MN, to be heald 2013-3014.
2011-2014	Co-organizer, semester long program in algebraic topology, MSRI
2016-2017.	Co-organizer, American Institute of Mathematics conference on the mathematics of the biomolecular world
2018-2019	Co-organizer and principal speaker, CBMS lecture series on topological data analysis, College of Charleston, May 2019

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 Math, Stanford University
1995-1998	Chair	Dept. of Math, Stanford University
1998-2004	Member, Appointments Committee	Dept. of Math, 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	
2005-2008	Member, Texas Instruments California Advisory Board on K-12 education	

- 2018- Member, Scientific Advisory Board, Wallenberg Foundation Artificial Intelligence Initiative.
- 2019- Member, Scientific Advisory Board, Topological Data Analysis Program, Oxford University

AWARDS & GRANTS HELD

- 1977 - 2015 NSF Directorate for Mathematical Sciences 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 Focused Research Group Grant in Mathematical Sciences, joint 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 Lead PI, 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 - Editor of **K-theory**
- January 1994- Editor of **Mathematical Research Letters**
- July 1996 – July 2006 Editor of **Geometry and Topology**
- August 2000- Editor in Chief of **Homology, Homotopy, and Applications**
- June 2009-June 2015 Editor, **New York Journal of Mathematics**
- January 2012-2016 Editor, **Journal of the Foundations of Computational Mathematics**
- January 2017- Founding Member Scientific Board, **Journal of Applied and Computational Topology**

VISITING POSITIONS

- Sept-Dec 1989 Member, Mathematical Sciences Research Institute
- Jan.-June 1990 Visiting Professor, University of California, San Diego

May-June, 1991
Aug.-Dec., 2006

Ordway Visiting Professor, University of Minnesota
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, Haüs 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.

February 2012 – Invited Lecture, Banff International Research Station conference on equivariant homotopy theory

February 2012 – Invited Lecture, minisymposium, AAAS annual meeting.

March 2012 – Invited Lecture, IMA conference on machine learning, Minneapolis

April 2012 – Invited lecture, Midwest Topology Seminar, Purdue University.

May 2012 – Panel discussion, Accel Partners meeting on “Big Data”

July 2012 – AMS Invited Lecture, Annual Meeting of Society for Industrial and Applied Mathematics

August 2012 – Invited Lecture, Arolla conference on Algebraic Topology

September 2012 – Keynote Lecture, Inaugural conference for Computational Institute, University of Illinois, Urbana-Champaign

September 2012 – Invited Lecture, Meeting on Mathematics and Criminology, Simon Fraser University

October 2012 – Invited Lecture, Banff International Research Station conference on Topological Data Analysis

November 2012 – Statistics Seminar, Stanford University

February 2013 – Commutative Algebra seminar, University of California, Berkeley

March 2013 – Invited Lecture series, Wayne State University, Detroit.

March 2013 – Everett Pitcher Lectures, 3 lectures, Lehigh University

March 2013 – Wing Lectures, University of Rochester, 3 lectures.

March 2013 – Invited Lecture, KTH/Karolinska Institute, Stockholm.

April 2013 – Plenary Lecture, AMS Regional Meeting, Boulder, Colorado.

May 2013 – Invited Lecture, Computational Mathematics Program, Cal Tech.

September 2013 – Invited Lecture, Workshop in Topological Methods in Data Analysis, Institute for Mathematics and its Applications, Minneapolis.

October 2013 – Invited Lecture, Union College Annual Topology Meeting, Schenectady, New York.

October 2013 – Invited Lecture, Operations Research Department, Massachusetts Institute of Technology

October 2013 – Colloquium, Macalester College, St. Paul, Minnesota.

February 2014 – Ulam Colloquium Lectures, University of Florida, Gainesville, Florida.

March 2014 – Presentation, Gigaom meeting, New York.

March 2014 – Four invited lectures, Seoul National University, Seoul, Korea.

April 2014 – Invited Lecture, Bay Area Discrete Mathematics Day.

April 2014 – Invited Lecture, Conference on Visualization in Mathematical Biology, MBI, Columbus, Ohio.

April 2014 – Invited talk, Department of Mathematics, Ohio State University.

May 2014 – Two invited lectures, Georgia Tech University, Atlanta, Georgia.

June 2014 – Invited Lecture, International Topology Conference in honor of Tom Goodwillie, Dubrovnik, Croatia.

September 2014 – Colloquium, Massachusetts Institute of Technology, Cambridge, Massachusetts.

September 2014 – Invited Lecture, Broad Institute, Cambridge, Massachusetts.

October 2014 – Colloquium, Michigan State University, East Lansing, Michigan.

October 2014 – Invited lecture, Biomolecules meeting, Michigan State University, East Lansing, Michigan.

October 2014 – Two invited lectures, Colorado State University, Fort Collins, Colorado.

November 2014 – Invited Lecture, Conference on Computational Topology, Copenhagen, Denmark.

April, 2015 – Invited lecture, Meeting on Mathematics and Statistics, University of Sharjah, U.A.E.

April 2015 – Colloquium Lecture, University of California, Davis, Davis, Ca.

May 2015 – Invited Lecture, Lehigh University Geometry and Topology meeting in honor of Don Davis, Lehigh, Pa.

May 2015 – Invited lecture, Meeting on new directions in K-theory, Columbus, Ohio.

June, 2015 – Invited lecture, Stevanovich Center for Financial Mathematics, University of Chicago, Chicago, Illinois.

June 2015 – Colloquium, Oxford University

July 2015 – Four lecture minicourse, Meeting of Young Topologists, EPFL, Lausanne.

July 2015 – Bernoulli Lecture, European Meeting of Statisticians

August 2015 – Invited Lecture, Conference on Big Data, CMSA, Harvard University, Cambridge, Mass.

September 2015 – Invited Address, Wait, What?, a DARPA Innovation symposium, St. Louis, Mo.

September 2015 – Invited lecture, Inaugural meeting for Computational Mathematics Program, Michigan State University, East Lansing, Michigan.

March 2016 – Invited Address, Nordic Congress of Mathematicians, Stockholm.

June 2016 – Volterra Lecture, University of Bergen

July 2016 – Invited lecture, ATMCS 7, Torino, Italy

August 2016 – Keynote address, Adobe Data Science Group, San Jose

October 2016 – Panel discussion, IIF, Washington D.C.

December 2016 – Invited lecture, Conference in honor of Nils Baas, Trondheim, Norway.

April 2017 – Invited talk, Fintech in Princeton meeting, Princeton, New Jersey

May 2017 – Invited presentation, Silicon Valley Open Doors, Mountain View, California

May 2017 – Keynote lecture, National Health IT Summit, Singapore

June 2017 – Invited lecture, Conference on Cancer Progression, Princeton, New Jersey

June 2017 – Invited lecture, Applied Topology in Bedlewo Conference, Bedlewo, Poland.

July 2017 – Invited lecture, American Institute of Mathematics Conference on Topology of the biomolecular world, San Jose, Ca.

September 2017 – Panel discussion, INSA, Washington, D.C.

September 2017 – O'Reilly tutorial presentation, San Francisco, Ca.

October 2017 – Invited presentation, NATO conference on health care, Prague

December 2017 – Invited talk and participation, Conference on Topological Data Analysis of Exclusion Zones, Edinburgh, U.K.

January 2018 – Joint invited address, Annual Mathematics meeting, San Diego, Ca.

February 2018 – Invited Presentation, Microsoft Research, Redmond, Wa.

February 2018 – Invited Presentation, Ohio State University, Columbus, Ohio.

June 2018 – Invited Lecture, Abel symposium, Geiranger, Norway

September 2018 – Invited Lecture, GETCO conference on computational topology, Oaxaca, Mexico.

October 2018 – Invited series of three lectures, Department of Mathematics, Chalmers Institute of Technology, Göteborg, Sweden.

January 2019 – Invited University Colloquium, University of Western Ontario, London, Ontario

April 2019 – IST Lecture, IST, Vienna,

May 2019 – CBMS course, 10 Lecture Course, Charleston, South Carolina.

June 2019 – Inaugural lecture for Southampton Research Center, Southampton, U.K.

September 2019 – Lecture on deep learning at Oxford University SPIRES meeting

October 2019 – Colloquium, University of Tennessee, Knoxville

November 2019 – Topology Seminar, Princeton University

December 2019 – Invited talk, International Conference on Machine Learning and Applications, Boca Raton

January 2020 – Invited one hour talk, session on Rips Theory, Joint Mathematics Meetings AMS/MAA, Denver

May 2020 – Plenary Address, Strong Korea Forum

June 2020 – Invited talk, Electrical Engineering Department, Rice University.

August 2020 – Invited talk, OxML summer school in machine learning, Oxford University

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, 85-105.
4. (with R. J. Milgram) “The structure of odd L -groups”, *Proceedings of Conference on Algebraic Topology*, Waterloo, Springer Lecture Notes #741, 1978, 1-72.
5. “Desuspension in the symmetric L -groups”, *Proceedings of Conference on Algebraic Topology*, Aarhus, Springer Lecture Notes #763, (1978), 175-197.
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), 283-313.
8. “On the stable splitting of $bo \wedge bo$ and torsion operations in connective K -theory”, *Pacific Journal of Mathematics*, **87**, No. **2** (1980), 283-297.
9. “Wu invariants of Hermitian forms”, *Journal of Algebra*, **65**, No. **1**, (1980), 188-205.

10. "Non-existence of free actions of elementary abelian groups on products of spheres", *American Journal of Mathematics*, **102** (1980), 1147-1157.
11. "Some restrictions on finite groups acting freely on $(S^n)^k$ ", *Trans. American Mathematical Society*, **264**, No. 2 (1981), 449-457.
12. "A counterexample to a conjecture of Steenrod", *Inventiones Mathematicae*, **64**, (1981) pp. 171-174.
13. "On the rank of abelian groups acting freely on $(S^n)^k$ ", *Inventiones Mathematicae*, **69**, (1982), pp. 393-400.
14. "On G. B. Segal's Burnside ring conjecture for $(\mathbb{Z}/2)^k$ ", *Topology*, **22**, No. 1, 1983, pp. 83-103.
15. "On the homology of finite free $(\mathbb{Z}/2)^n$ -complexes", *Inventiones Mathematicae*, **74**, 1983, pp. 139-147.
16. "A simplicial group construction for balanced products", *Topology*, **23**, No. 1, 1984, pp. 85-89.
17. "Equivariant stable homotopy and Segal's Burnside ring conjecture", *Annals of Mathematics*, **120**, 1984, pp. 189-224.
18. (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.
19. "Free $(\mathbb{Z}/2)^k$ -actions and a problem in commutative algebra", *Proceedings of Symposium in Transformation groups*, Poznan, Poland, 1985, 79-83.
20. "Segal's Burnside ring conjecture and related problems in topology", *Proceedings of the 1986 International Congress of Mathematicians*, Berkeley, CA, 1987, pp. 574-579.
21. "Equivariant stable homotopy and Sullivan's conjecture", *Inventiones Mathematicae*, **103**, Fasc. 3, 1991, pp. 497-526.
22. (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.
23. "Free $(\mathbb{Z}/2)^3$ -actions on finite complexes", *Algebraic Topology, K-theory*, Annals of Mathematical Studies #113, 1987, edited by W. Browder, 332-344.
24. (with R. L. Cohen) "The cyclic groups and the free loop space", *Comm. Mathematica Helvetici*, **62**, 1987, pp. 423-449.
25. "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.
26. "Equivariant stable homotopy and the descent problem in unstable Algebraic K -theory", *American Journal of Mathematics*, **113**, 1991, pp. 963-973
27. "On the homotopy fixed point problem for free loop spaces and other function complexes", *K-theory*, **4**, 1991, pp. 339-361.
28. "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.
29. "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
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