

# Stanford

---



## Ralph Cohen

The Barbara Kimball Browning Professor in the School of Humanities and Sciences,  
Emeritus

Mathematics

Curriculum Vitae available Online

### Bio

---

#### ACADEMIC APPOINTMENTS

- Emeritus Faculty, Acad Council, Mathematics

#### ADMINISTRATIVE APPOINTMENTS

- Senior Associate Dean, Natural Sciences, College of Humanities and Sciences, Stanford University, (2010- present)
- Barbara Kimball Browning Professor, Humanities and Sciences, Stanford University, (2009- present)
- Inaugural Fellow, American Mathematical Society, (2013-2013)
- Distinguished Visiting Professor, University of Copenhagen, Denmark, (2009-2010)
- Fellow in Undergraduate Education, Bass University, (2005-2010)
- Professeur Invité, Univ. of Paris, (2005-2005)
- Visiting Professor, Trondheim University, Norway, (2004-2004)
- Professeur Invité, Univ. of Lille, France, (2003-2003)
- Visiting Professor, Oxford University, (2002-2002)
- Visiting Professor, Cambridge University, (1997-1997)
- Visiting Professor, Univ. of Paris, (1989-1989)
- Visiting Professor, Oxford University, (1988-1989)
- Professor of Mathematics, Stanford University, (1987- present)
- Associate Professor of Mathematics, Stanford University, (1983-1987)
- Assistant Professor of Mathematics, Stanford University, (1980-1983)
- Visiting Professor, Nankai Institute, China, (1987-1987)
- Visiting Professor, Princeton University, (1983-1984)
- L.E. Dickson Instructor of Mathematics, University of Chicago, (1978-1980)
- Visiting Professor, Northwestern University, (1982-1982)

#### HONORS AND AWARDS

- Dean's Award for Distinguished Teaching, Stanford University (2002)
- International research award, National Science Foundation (1988 - 1989)
- Presidential Young Investigator Award, National Science Foundation (1984 - 1989)

## BOARDS, ADVISORY COMMITTEES, PROFESSIONAL ORGANIZATIONS

- Editor, Journal of Geometry and Topology (1997 - present)
- Editor, Homotopy, Homology, and its Applications (2004 - present)
- Chair, Editorial Board, Mathematical Surveys and Monographs, American Math. Society (2007 - present)
- Editor of Graduate Text Series, Oxford University, Press (1996 - present)
- Founding Editor, Journal of Topology (2007 - 2013)
- Editor, Topology (1988 - 2007)
- Editor, Proceedings of the American Mathematical Society (1997 - 2001)
- Editor, Transactions of the American Mathematical Society, and of Memoirs of the American Mathematical Society (1985 - 1992)
- Director, Stanford's "Mathematics Research Center" (2000 - 2009)
- Elected member, American Math. Society Executive Committee
- Member, Scientific Advisory Board, Banff International Research Station (2008 - 2012)
- Member, American Mathematical Society (1975)
- Senior Associate Dean for the Natural Sciences, School of Humanities of Sciences, Stanford University (2010 - present)
- Director, Mathematics Research Center, Stanford University (2000 - 2009)
- University Academic Senate, Stanford University (2000 - 2002)
- University Academic Senate, Stanford University (2005 - 2007)
- University Academic Senate, Stanford University (2011 - 2013)
- Chair, Academic Senate Committee on Committees, Stanford University (2011 - present)
- Chairman, Dept. of Mathematics, Stanford University (1992 - 1995)
- Consultant to State Board of Education on K-12 Mathematics Content Standards, State of California (1997 - 2000)
- California State Mathematics Framework Committee, State of California (1997 - 1997)
- Co-founder, with R. Mazzeo, Stanford University Mathematics Camp (1995 - 1995)

## PROFESSIONAL EDUCATION

- Ph.D., Brandeis University , Mathematics (1978)
- M.A., Brandeis University , Mathematics (1975)
- B.S., University of Michigan , Mathematics (1973)

## Publications

---

### PUBLICATIONS

- **MORSE FIELD THEORY** *ASIAN JOURNAL OF MATHEMATICS*  
Cohen, R., Norbury, P.  
2012; 16 (4): 661-711
- **Stability for closed surfaces in a background space** *Homology, Homotopy, and Applications*  
Cohen, R. L.  
2011; 13 (2): 301 - 313
- **The Floer Homotopy Type of the Cotangent Bundle** *PURE AND APPLIED MATHEMATICS QUARTERLY*  
Cohen, R. L.  
2010; 6 (2): 391-438
- **Stability phenomena in the topology of moduli spaces** *Surveys in Differential Geometry XIV*

- Cohen, R. L.  
edited by Ji, L., Wolpert, S., Yau, S. T.  
International Press.2010: 23–56
- **Topological Hochschild homology of Thom spectra and the free loop space** *GEOMETRY & TOPOLOGY*  
Blumberg, A. J., Cohen, R. L., Schlichtkrull, C.  
2010; 14 (2): 1165-1242
  - **Universal moduli spaces of surfaces with flat bundles and cobordism theory** *ADVANCES IN MATHEMATICS*  
Cohen, R. L., Galatius, S., Kitchloo, N.  
2009; 221 (4): 1227-1246
  - **Floer Homotopy Theory, Realizing Chain Complexes by Module Spectra, and Manifolds with Corners** *4th Abel Symposium*  
Cohen, R. L.  
SPRINGER.2009: 39–59
  - **UMKEHR MAPS HOMOLOGY HOMOTOPY AND APPLICATIONS**  
Cohen, R. L., Klein, J. R.  
2009; 11 (1): 17-33
  - **A Morse Theoretic Description of String Topology** *Conference on New Perspectives and Challenges in Symplectic Field Theory held in honor of Yasha Eliashberg*  
Cohen, R. L., Schwarz, M.  
AMER MATHEMATICAL SOC.2009: 147–172
  - **Surfaces in a background space and the homology of mapping class groups** *AMS Summer Research Institute on Algebraic Geometry*  
Cohen, R. L., Madsen, I.  
AMER MATHEMATICAL SOC.2009: 43–76
  - **Open-closed field theories, string topology, and Hochschild homology** *3rd Arolla Conference on Algebraic Topology*  
Blumberg, A. J., Cohen, R. L., Teleman, C.  
AMER MATHEMATICAL SOC.2009: 53–76
  - **The homotopy invariance of the string topology loop product and string bracket** *JOURNAL OF TOPOLOGY*  
Cohen, R. L., Klein, J. R., Sullivan, D.  
2008; 1 (2): 391-408
  - **String topology of Poincaré duality groups** *Geometry and Topology Monographs*  
Cohen, R. L., Abbaspour, H., Gruher, K.  
2007; 13: 1 - 10
  - **The topology of the category of open and closed strings** *Conference on Homotopy Theory to Celebrate Sam Gitler 70th Birthday*  
Baas, N. A., Cohen, R. L., Ramirez, A.  
AMER MATHEMATICAL SOC.2006: 11–26
  - **String Topology and Cyclic Homology** *Adv. Courses in Math, CRM*  
Cohen, R. L., Hess, K., Voronov, A. A.  
Birkhauser Verlag.2006
  - **Notes on String Topology** *String Topology and Cyclic Homology, Adv. Courses in Math: CRM, Barcelona,*  
Cohen, R. L., Voronov, A.  
Birkhauser.2006: 1–95
  - **Morse theory, graphs, and string topology** *Conference of the NATO-Advanced-Study-Institute on Morse Theoretic Methods in Nonlinear Analysis and in Symplectic Topology*  
Cohen, R. L.  
SPRINGER.2006: 149–184
  - **String topology: homotopy and geometric perspectives** *Encyclopedia of Mathematical Physics*  
Cohen, R. L.  
edited by Francoise, J. P., Naber, G. L., T, T. S.

Oxford: Elsevier.2006: 111–114

- **The topology of the category of open and closed strings** *Contemporary Mathematics*  
Cohen, R. L., Bass, N. A., Ramirez, A.  
2005; 407: 11 - 26
- **A polarized view of string topology** *Topology, Geometry, and Quantum Field Theory, London Math. Soc. Lecture Notes*  
Cohen, R. L., Godin, W. V.  
2004; 308: 127 - 154
- **Multiplicative properties of Atiyah duality** *Homology, Homotopy, and its Applications*  
Cohen, R. L.  
2004; 6 (1): 269 - 281
- **Fourier decompositions of loop bundles** *Contemporary Mathematics*  
Cohen, R. L., Stacey, A.  
2004; 346: 85 - 95
- **The loop homology algebra of spheres and projective spaces** *International Conference in Algebraic Topology*  
Cohen, R. L., Jones, J. D., Yan, J.  
BIRKHAUSER VERLAG AG.2004: 77–92
- **A homotopy theoretic realization of string topology** *MATHEMATISCHE ANNALEN*  
Cohen, R. L., Jones, J. A.  
2002; 324 (4): 773-798
- **Holomorphic K-theory, algebraic co-cycles, and loop groups** *K-THEORY*  
Cohen, R. L., Lima, P.  
2001; 23 (4): 345-376
- **Stability for holomorphic spheres and Morse theory** *Contemporary Mathematics*  
Cohen, R. L., Segal, G., Jones, J. S.  
2000; 258: 87 - 106
- **Holomorphic spheres in loop groups and Bott periodicity** *Asian Jour. of Math.*  
Cohen, R. L., Lupercio, E., Segal, G. B.  
1999; 3 (4): 801 - 818
- **On the algebraic K-theory of simply connected spaces** *DUKE MATHEMATICAL JOURNAL*  
Bokstedt, M., Carlsson, G., Cohen, R., Goodwillie, T., HSIANG, W. C., Madsen, I.  
1996; 84 (3): 541-563
- **Stabilizing moduli spaces of self dual connections** *Turkish Journal of Math.*  
Cohen, R. L.  
1995; 19: 179 - 187
- **Floer's infinite dimensional Morse theory and homotopy theory** *Floer Memorial Volume, Birkhauser Verlag Prog. in Math.*  
Cohen, R. L., Jones, J. S.  
1995; 133: 287 - 325
- **The homotopy type of gauge theoretic moduli spaces** *Algebraic Topology and its Applications M.S.R.I publication series*  
Cohen, R. L., Milgram, R. J.  
1994; 27: 15 - 55
- **Moduli spaces of graphs and cohomology operations** *Turkish Journal of Math.*  
Cohen, R., Betz, M.  
1994; 18: 23 - 41
- **Algebraic Topology and its Applications** *M.S.R.I publication series*  
Cohen, R. L.  
edited by Cohen, R. L., Carlsson, G., Jones, J. S., Hsiang, W. C.

1994; 27

● **MONOPOLES, BRAID-GROUPS, AND THE DIRAC OPERATOR** *COMMUNICATIONS IN MATHEMATICAL PHYSICS*

Cohen, R. L., Jones, J. D.  
1993; 158 (2): 241-266

● **THE HOMOTOPY TYPE OF RATIONAL FUNCTIONS** *MATHEMATISCHE ZEITSCHRIFT*

Cohen, F. R., Cohen, R. L., Mann, B. M., Milgram, R. J.  
1993; 213 (1): 37-47

● **Morse theory via moduli spaces** *Proceedings of workshop on gauge theory, Matematica Contemporanea, Soc. Brasileira de Matematica*

Cohen, R. L.  
1992: 19 - 66

● **THE TOPOLOGY OF RATIONAL FUNCTIONS AND DIVISORS OF SURFACES** *ACTA MATHEMATICA*

Cohen, F. R., Cohen, R. L., Mann, B. M., Milgram, R. J.  
1991; 166 (3-4): 163-221

● **Rational functions, labelled configurations, and Hilbert schemes** *Journal of the London Math. Society*

Cohen, R. L., Shimamoto, D.  
1991; 43: 509 -528

● **ALGEBRAIC K-THEORY OF SPACES AND THE NOVIKOV-CONJECTURE** *TOPOLOGY*

Cohen, R. L., Jones, J. D.  
1990; 29 (3): 317-344

● **Representations of braid groups and operators coupled to monopoles** *London Math. Society Lecture Note Series*

Cohen, R. L., Jones, J. S.  
1990; 150: 191 - 205

● **LECTURES ON IMMERSION THEORY** *LECTURE NOTES IN MATHEMATICS*

Cohen, R. L., Tillmann, U.  
1989; 1369: 71-124

● **Divisors and configurations on a surface** *Proceedings of the Conference in Algebraic Topology, Northwestern Univ. 1988, Contemporary Mathematics*

Cohen, R. L., Cohen, F., Mann, B., Milgram, R. J.  
1989; 96: 103 - 108

● **Proceedings of the International Conference on Algebraic Topology**

Cohen, R. L.  
edited by Cohen, R. L., Carlsson, G., Miller, H., Raven, D.  
1989

● **Generalized Tate homology, homotopy fixed points, and the transfer** *Proceedings of the conference in Algebraic Topology, Northwestern Univ. 1988, Contemporary Mathematics*

Cohen, R. L., Adem, A., Dwyer, W.  
1989; 96: 1 - 13

● **THE ADAMS SPECTRAL SEQUENCE OF THE REAL PROJECTIVE SPACES** *PACIFIC JOURNAL OF MATHEMATICS*

Cohen, R. L., Lin, W. H., Mahowald, M. E.  
1988; 134 (1): 27-55

● **A MODEL FOR THE FREE LOOP SPACE OF A SUSPENSION** *LECTURE NOTES IN MATHEMATICS*

Cohen, R. L.  
1987; 1286: 193-207

● **THE ADAMS SPECTRAL SEQUENCE OF OMEGA-2S3 AND BROWN GITLET SPECTRA** *ANNALS OF MATHEMATICS STUDIES*

Brown, E. H., Cohen, R. L.  
1987: 101-125

- **The free loop space and the algebraic K - theory of spaces *K - theory***

Cohen, R. L., Carlsson, G., Goodwillie, T., Hsiang, W.  
1987; 1: 53 - 82

- **Pseudo - isotopies, algebraic K - theory, and homotopy theory *London Mathematics Society Lecture Note Ser.***

Cohen, R. L.  
1987; 117: 35 - 72

- **The free loop space and the cyclic groups *Commentarii Math. Helvetici.***

Cohen, R. L., Carlsson, G.  
1987; 62: 423 - 449

- **A DECOMPOSITION OF THE SPACE OF GENERALIZED MORSE FUNCTIONS *ANNALS OF MATHEMATICS STUDIES***

Cohen, R. L.  
1987: 365-391

- **REALIZING TRANSFER MAPS FOR RAMIFIED COVERINGS *PACIFIC JOURNAL OF MATHEMATICS***

Cohen, R. L.  
1986; 122 (2): 347-356

- **THE IMMERSION CONJECTURE FOR DIFFERENTIABLE MANIFOLDS *ANNALS OF MATHEMATICS***

Cohen, R. L.  
1985; 122 (2): 237-328

- **THE KERVAIRE INVARIANT OF IMMERSIONS *INVENTIONES MATHEMATICAE***

Cohen, R. L., Jones, J. D., Mahowald, M. E.  
1985; 79 (1): 95-123

- **The homotopy theory of immersions**

Cohen, R. L.  
1985: 627-40

- **SECONDARY COHOMOLOGY OPERATIONS THAT DETECT HOMOTOPY CLASSES *TOPOLOGY***

Cohen, R. L., Goerss, P.  
1984; 23 (2): 177-194

- **BUNDLES OVER CONFIGURATION-SPACES *PACIFIC JOURNAL OF MATHEMATICS***

Cohen, F. R., Cohen, R. L., Kuhn, N. J., NEISENDORFER, J. L.  
1983; 104 (1): 47-54

- **IMMERSIONS OF MANIFOLDS (NORMAL BUNDLE CLASSIFYING SPACE THOM SPACE) *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA-PHYSICAL SCIENCES***

Cohen, R. L.  
1982; 79 (10): 3390-3392

- **ODD PRIMARY INFINITE FAMILIES IN STABLE-HOMOTOPY THEORY *MEMOIRS OF THE AMERICAN MATHEMATICAL SOCIETY***

Cohen, R. L.  
1981; 30 (242): 1-92

- **Representations of Brown - Gitler spectra *Proceedings of Topology Symposium***

Cohen, R. L.  
1980; 788: 399 - 417

- **STABLE PROOFS OF STABLE SPLITTINGS *MATHEMATICAL PROCEEDINGS OF THE CAMBRIDGE PHILOSOPHICAL SOCIETY***

Cohen, R. L.  
1980; 88 (JUL): 149-151

- **The Geometry of #2S3 and braid orientations *Inventiones Mathematicae***

Cohen, R. L.  
1979; 54: 53 - 67