

Curriculum Vitae

**Ronald G. Douglas**

**BIRTHDATE:** December 10, 1938

**BIRTHPLACE:** Osgood, Indiana

**EDUCATION:** B.S. 1960 Illinois Institute of Technology  
Ph.D. 1962 Louisiana State University

**PROFESSIONAL EXPERIENCE:**

Counselor to the President	Texas A&M University 2002
Executive Vice President and Provost	Texas A&M University 1996 - 2002
Distinguished Professor	Department of Mathematics Texas A&M University 1999 - Present
Professor	Department of Mathematics Texas A&M University 1996 - 1999
Vice Provost	Undergraduate Studies State University of New York at Stony Brook 1990 - 1995
Dean	Division of Physical Sciences and Mathematics State University of New York at Stony Brook 1986 - 1990
Graduate Director	Department of Mathematics State University of New York at Stony Brook 1976- 1981
Chairman	Department of Mathematics State University of New York at Stony Brook 1981 - 1984 1971 - 1973
Professor	Department of Mathematics State University of New York at Stony Brook

	1969 - 1996
Professor	Department of Mathematics University of Michigan 1969
Associate Professor	Department of Mathematics University of Michigan 1966 - 1969
Assistant Professor	Department of Mathematics University of Michigan 1964 - 1966
Hildebrandt Research Instructor	Department of Mathematics University of Michigan 1962 - 1964

**VISITING POSITIONS:**

Visiting Research Professor  
Mathematics Institute  
Aarhus University, 1991

Visiting Research Professor  
Mathematics Institute  
Australian National University, 1991

Visiting Professor  
Department of Mathematics  
Szechuan University, 1985

Fellow and Program Committee Member  
Mathematical Sciences Research Institute  
Berkeley, California, 1984 - 1985

Visiting Professor  
Mittag-Leffler Institute  
Sweden, 1980

Visiting Professor  
Department of Mathematics  
Tel Aviv University, 1977

Senior Fellow of Science  
Research Council of Great Britain  
University of Newcastle upon Tyne, 1974

Distinguished Visiting Professor

Bucknell University, 1973

Fellow of N.R.C.  
Institute for Advanced Study,  
Princeton, N.J., 1965 - 1966

**AWARDS:**

Fellow, American Association for the Advancement of Science  
1989 - Present

Guggenheim Fellow  
1980 - 1981

Sloan Fellow  
1968 - 1974

AFOSR/NRC Postdoctoral Fellowship  
1965 - 1966

Research Grants, National Science Foundation  
1963 - 1997

**PRINCIPAL INVITED ADDRESSES:**

Principal Speaker,  
Irish Operator Theory Conference  
Cork, 1991

Principal Speaker, Great Plains  
Operator Theory Seminar  
Indianapolis, 1988

Calculus: Past, Present and Future  
Mathematical Association of America  
Atlanta, Georgia, 1988

Principal Speaker,  
Canadian Operator Theory Conference  
Victoria, 1986

Annual Meeting  
Canadian Mathematical Society  
Montreal, 1983

International Congress of Mathematicians  
Helsinki, Finland, 1978

Eastern Sectional Meeting, New York

American Mathematical Society, 1978

Herman Weyl Lectures  
Institute for Advanced Study  
Princeton, N.J., 1978

British Mathematical Colloquium  
Sussex, 1974

Principal Speaker, CBMS  
University of Georgia  
Regional Conference, 1972

Plus invited speaker at several hundred seminars, colloquiums, and conferences around the world on mathematical research in operator theory and operator algebras. More recently invited speaker at several dozen workshops and conferences on calculus reform and mathematics education.

#### **UNIVERSITY SERVICE:**

Formula Advisory Committee  
Texas Higher Education Coordinating Board  
1997 - 2001

Member, Search Committee  
Vice President for University Affairs  
1994

President's Cabinet  
State University of New York  
1993 - 1995

Member, Advisory Committee  
SUNY Math Alert Program  
1993 - 1995

ADA Action Team  
State University of New York at Stony Brook  
1992 - 1995

President's Priorities Committee  
State University of New York at Stony Brook  
1992 - 1995

Enrollment Executive Committee  
State University of New York at Stony Brook  
1990 - 1995

Admissions Committee, University Senate  
State University of New York at Stony Brook  
1991 - 1995

Undergraduate Council  
University Senate  
State University of New York at Stony Brook  
1991 - 1995

Scholarship Management Committee  
University Senate  
State University of New York at Stony Brook  
1990 - 1995

Provostial Council  
State University of New York at Stony Brook  
1990 - 1995

Chairman, Search Committee  
Director of Admissions and Dean of Enrollment Management  
State University of New York at Stony Brook  
1987

University Senate President  
State University of New York at Stony Brook  
1981 - 1983

Curriculum Committee, College of Arts and Sciences  
State University of New York at Stony Brook  
1978 - 1979

Committee on Academic Standing and Appeals  
College of Arts and Sciences  
State University of New York at Stony Brook  
1977 - 1978

Chairman, Ad Hoc Committee on the Calendar  
State University of New York at Stony Brook  
1973

Chairman, Undergraduate Program Committee  
Department of Mathematics  
University of Michigan  
1967 - 1969

Executive Committee, Department of Mathematics  
University of Michigan  
1966 - 1967

**PROFESSIONAL SERVICE:**

Member, Award Panel  
Director's Award for Distinguished Teaching Scholars

National Science Foundation  
2001

Member, OA/OT Review Panel  
National Science Foundation  
2000

Review Committee, Mathematics Department  
San Francisco State University  
1999

Chair, Mathematics Section  
American Association for the Advancement of Science  
1999-2000

Member, Education and Human Resources Advisory Committee  
National Science Foundation  
1999 - Present

Chair, Review Committee  
Mathematics Department  
University of Nevada at Reno  
1998

Member, Committee of Visitors  
Division of Mathematical Sciences  
National Science Foundation  
1998

Member, Commission on Physical Sciences and Mathematics  
National Research Council  
1996 - 2000

Council on Academic Affairs Committee on Undergraduate Education,  
National Association of State Universities and Land-Grant Colleges (NASULGC),  
1996 - 1999

National Visiting Committee  
NSF Funded Collaboration for a New Model for K-12 Teacher Preparation  
Temple University  
1995 - 1996

Chair, Review Committee  
Mathematical Sciences Department  
Indiana University-Purdue University at Indianapolis  
1994

Chair, US Delegation  
International Mathematical Union  
Lucerne

1994

Member, Advisory Committee  
Chair, Subcommittee on Education  
MPS Division NSF  
1993 - 1995

Chair, Committee on Education  
American Mathematical Society  
1994 - 1996

Review Committee, Mathematics Department  
University of Colorado  
1994

NRC Workshops: Chantilly, Vail  
Federal Policy in Physical Sciences  
1993, 1994

Co-organizer, AMS  
Research Institute  
Seattle, WA  
1993

Review Committee, Physical Sciences and Mathematics  
University of California at Berkeley  
1993

Mathematics Education Reform Network  
Advisory Committee  
1994 - 2000

National Sigma Xi Lecturer  
1993 - 1995

Reviewer, Annenberg/CPB Project  
Mathematics and Science Education  
1992

Chair, Review Committee  
Mathematics Department, UCSD  
LaJolla, CA  
1992

Chairman, Doctoral/Postdoctoral  
Study in the Mathematical Sciences, NRC  
Washington, DC  
1990 - 1991

Chair, Selection Committee  
Louisiana State Research  
Grants for Mathematical Sciences

1989

Reviewer, Undergraduate Program in Mathematics  
Oberlin College  
Oberlin, Ohio  
1988

Co-organizer, AMS Research  
Summer Institute  
Durham, New Hampshire  
1988

Member, MS 2000 Committee, National Research Council  
Washington, D.C.  
1988 - 1991

Organizer, Calculus for a New Century  
Washington, D.C.  
1987

Chairman, NRC Task Force on Calculus  
Washington, D.C.  
1987 - 1990

Member, Vice-Chair  
Board of Mathematical Sciences  
Washington, D.C.  
1987 - 1993

Member, Executive Committee  
Board of Mathematical Sciences  
Washington, D.C.  
1988 - 1993

Chairman, Science Policy Committee  
American Mathematical Society  
Providence, R.I.  
1987 - 1989

Member, Council  
American Mathematical Society  
1987 - 1990, 1976 - 1980

Evaluator, Mathematics Undergraduate Programs,  
Missouri Public Universities and Colleges  
1986

Organizer, Conference/Workshop on Calculus Instruction  
Funded by Sloan Foundation  
Tulane University  
1986

Advisor, Undergraduate Mathematics Education,  
National Science Foundation  
Washington, D.C.  
1986  
Editorial Board, Proceedings  
Royal Society of Edinburgh  
1985 - Present

Chairman, Committee on Mathematical Sciences  
Institutes, National Science Foundation  
Washington, D.C.  
1980 - 1981

Nominations Committee  
American Mathematical Society  
Providence, R.I.  
1980 - 1982

Executive Committee, Council,  
American Mathematical Society  
Providence, R.I.  
1978 - 1980

Chairman, Translations Committee  
American Mathematical Society  
Providence, R.I.  
1976 - 1981

Editorial Board  
Integral Equations and Operator Theory  
1976 - Present

Founding Editor  
Journal of Operator Theory  
1976 - 1991

Editor, Proceedings  
American Mathematical Society  
Providence, R.I.  
1974 - 1980

Editor, Pitman Advanced Publishing Program in  
Mathematics, Addison-Wesley-Longman, now CCR Press  
1974 - Present

#### **DOCTORAL STUDENTS:**

Directed over twenty-five dissertations in mathematics research at Michigan, Stony Brook, and Texas A & M, 1967 - 2002

## PRINCIPAL CONTRIBUTIONS TO SCIENCE:

Author of over one hundred research articles and books.

1993

(with V. Paulsen, C.-H. Sah and K. Yan) Algebraic Reduction and Rigidity for Hilbert Modules, Amer. J. Math. 117 (1995) 75-92.

1991

(with S. Hurder and J. Kaminker) Cyclic Cocycles, Renormalization and Eta Invariants. Invent. Math. 103, 101 - 179.

1989

(with P. Baum and M.E. Taylor), Cycles and Relative Cycles in Analytic K-homology, J. Diff. Geometry. 30, 261 - 304.

1989

(with V. Paulsen) Hilbert Modules Over Function Algebras, Longman, Research Monograph, Harlow, England.

1982

(with P. Baum), K-homology and Index Theory, Proc. Symp. Pure Math. 38, American Math. Soc., 117 - 174.

1980

C\*-Algebras, Extensions and K-homology, Ann. Math. Studies 95, Princeton.

1978

(with M. Cowen), Complex Geometry and Operator Theory, Acta. Math. 141, 187 - 261.

1977

(with L.G. Brown and P.A. Fillmore), Extensions of C\*-Algebras, Operators With compact Self-Commutators, and K-homology, Ann. of Math. 105, 265 - 324.

1973

Banach Algebra Techniques In The Theory of Toeplitz Operators, American Math. Soc., Providence.

1970

(with H.S. Shapiro and A.L. Shields), Cyclic Vectors and Invariant Subspaces For The Backward Shift Operator, Ann. Inst. Fourier (Grenoble) 20, 27 - 76.

### **BOOKS AND MONOGRAPHS AUTHORED**

Banach Algebra Techniques in Operator Theory,  
Academic Press, New York, 1972.

Banach Algebra Techniques In The Theory of Toeplitz Operators,  
American Math. Soc., Providence, 1973.

C\*-Algebras, Extensions and K-homology, Ann. Math. Studies 95, Princeton, 1980.

(with V. Paulsen) Hilbert Modules Over Function Algebras,  
Longman, Research Monograph, Harlow, England, 1989.

### **BOOKS AND MONOGRAPHS EDITED**

Topics in Modern Operator Theory. Proc. Romania (1980)  
Birkhauser Verlag, Basel - Boston - Stuttgart, 1981.

Invariant Subspaces and Other Topics, Proc. Conf. Romania (1981)  
Birkhauser - Verlag, Basel - Boston - Stuttgart, 1982.

Operator Algebras and K-Theory, Contem. Math. 10, Amer. Math. Soc., Providence,  
1982.

Advances in Invariant Subspaces and Other Results in Operator Theory, Proc. Conf.  
Romaina (1984) Birkhauser - Verlag, Basel - Boston - Stuttgart, 1986.

Toward A Lean and Lively Calculus, editor, MAA Notes No. 6, Math. Assoc. Amer.,  
Washington, 1986.

Operator Theory/Operator Algebras and Applications, Proc. Sym. Pure Math. 51,  
Amer. Math. Soc., Providence 1990.

### **RECENT PUBLICATIONS: (1988 - Present)**

82. On Silov resolutions of Hilbert modules, in Operator Theory: Advances and Applications, vol. 28 Birkhauser - Verlag, Basel, 51 - 60. (1988).

83. Toeplitz operators and the eta invariant: The case of  $S^1$ , (with S. Hurder and J. Kaminker) Contemporary Math. 70 (1988) 11 - 41.

84. Elliptic invariants for differential operators, in Operator Theory/Operator Algebras and Applications in Proceedings Symposia in Pure Mathematics, vol. 48 (1988), 275 - 284.

85. Another look at real-valued index theory, in Surveys of some recent results in operator theory, II. Longman Research Notes, No. 192, Harlow, London (1988) pp. 91 - 120.
86. Algebraic geometry and operator theory (with V. Paulsen and K. Yan) Bull. Amer. Math. Soc. 20 (1989) 67 - 71.
87. Cycles and relative cycles in analytical K-homology, (with P. Baum and M. Taylor) J. Diff. Geometry 30 (1989) 261 - 304.
88. Elliptic invariants and operator algebras: toroidal examples. In Operator algebras and applications, vol. 1: Structure theory; K-Theory, geometry and topology, London Math. Soc. Lect. Notes, vol. 136, Cambridge Univ. Press (1988) 61 - 75.
89. Analytic realization of relative K-homology on manifolds with boundary and pairing with K-cohomology (with K. Wojciechowski) Zeitschrift fur Analysis und ihre Anwendungen 8 (1989) 485 - 499.
90. Hilbert modules over function algebras (with V. Paulsen), Longman Research Notes, 1989.
91. Eta-Invariants and von Neumann Algebras, (with S. Hurder and J. Kaminker) Bull. Amer. Math Soc. 21 (1989) 83 - 87.
92. On the rigidity of Hardy submodules (with K. Yan), Integral Equat. Oper. Thy. 13 (1990) 350 - 363.
93. Invariants for Hilbert Modules, Proc. Sym. Pure Math. 51 (1990) 179 - 196.
94. Relative K-homology and C\*-Algebras (with P. Baum) J. K. -Thy, 5 (1991) 1 - 46.
95. Cyclic cocycles, renormalization and eta invariants (with S. Hurder and J. Kaminker). Invent. Math 103 (1991) 101 - 129.
96. The longitudinal cyclic cocycle and the index of Toeplitz operators (with S. Hurder and J. Kaminker), J. Funct. Anal. 101 (1991) 120 - 144.
97. Adiabatic limit of the eta-invariant: The Odd-Dimensional Atiyah-Patodi-Singer Problem (with K. Wojciechowski). Comm. Math. Phys. 142 (1991) 139 - 168.
98. Elliptic Renormalization, in Current Topics in Operator Algebras, ed. H. Araki, H. Choda, Y. Nakayami, K. Saito, J. Tomiyama, Proc. Sat. Conf. ICM-90, World Scientific (1991) 225 - 233.
99. A multi-variable Berger-Shaw theorem (with K. Yan). J. Oper. Thy. 27 (1992) 205-217.

100. Localization of Hilbert Modules (with X. Chen) Mich. Math. J. 39 (1992) 443-454.
101. Rigidity of Hardy Submodules on the Unit Ball (with X. Chen), Houston Math. J. 18 (1992) 117 - 125.
102. Uniqueness of Multi-Variate Canonical Models (with C. Foias), Acta Sci. Math (Szeged) 57 (1993) 79-81.
103. Hilbert-Samuel Polynomials for Hilbert Modules (with K. Yan) Indiana J. Math. 42 (1993) 811 - 820.
104. Odd Index Theorems and Operator Algebras in C\*-Algebras: 1943-1993, A Fifty Year Celebration, ed. R.S. Doran, Contemp. Math. 167 (1994) 203 - 303.
105. Algebraic reduction and rigidity for Hilbert modules (with V. Paulsen, C-H. Sah and K. Yan) Amer. J. Math. 117 (1995) 75 - 92.
106. Index Formulas for Geometric Dirac Operators in Riemannian Foliations (with J. Glazebrook, F. Kamber and G. Yu) J. K - Theory 9 (1995) 407-441.
107. Models and Resolutions for Hilbert Modules, in Multivariate Operator Theory, Contemp. Math. 185 (1995) 109 - 132.
108. Induced cyclic cocycles and higher eta invariant (with J. Kaminker) J. Functional Anal. 147 (1997) 301-326.
109. Some calculations for Hilbert Modules (with G. Misra) J. Orissa Math. Soc. 12-15 (1993-96) 75-85.
110. Geometric Invariants for Resolutions of Hilbert Modules, (with G. Misra) in Operator Theory: Advances and Applications, Vol. 104, Birkhauser Verlag, Basel, 1998, pp. 83-112.
111. Quotient Modules and Canonical Models (with X. Chen) (in preparation).
112. Berger-Shaw Theorem and the Connecting Homomorphism in Cyclic Theory (with K. Yan) (in preparation).
113. Higher spectral flow and algebraic K-Theory (with J. Kaminker) (in preparation).
114. Quotient Hardy modules (with R. Yang) Houston J. Math. 24 (1998) 507-577.
115. On quotient modules - The case of arbitrary multiplicity (with G. Misra and V. Varughese) J. Functional Anal. 174 (2000) 364-398.
116. Operator Theory in the Hardy Space over the Bidisk (I) (with R. Yang), Integral Equat. Oper. Thy. 38 (2000) 207-221.

117. A Classification of Multi-Isometries (with C. Foias) (in preparation).
118. On Quotient Modules (with G. Misra) Sz-Nagy Memorial Volume (to appear).
119. Some Geometric Invariants from Resolutions of Hilbert Modules (with G. Misra and C. Varughese). Proceedings IWOTA Conferences (to appear).
120. On quotient modules - The case of arbitrary multiplicity II (with G. Misra) (in preparation).
121. On Locally Free Resolutions of Hilbert Modules (with G. Misra). Proceedings Cochin Conference (in preparation).

#### **OTHER PUBLICATIONS:**

The Importance of Calculus in Core Mathematics, *J. College Sci. Teach.* 15 (1986) 250 - 1, 397.

Castles in the Sand, in Calculus for a New Century, MAA Notes No. 8, Math Assoc. Amer., Washington, 1987, pp. 4 - 5.

Today's Calculus Courses Are Too Watered Down and Outdated to Capture The Interest of Students, Opinion in Chronicle of Higher Education 34 (1988) B1, B3.

Calculus Reform, UME Trends, 1 (1989) 4.

Michigan Years, in Paul Halmos: Celebration 50 Years of Mathematics, Springer-Verlag, New York (1991) 127 - 131.

Asking the Right Question About the New Calculus, UME Trends, 3 (1992) 1, 4.

Educating American Mathematical Scientists, UME Trends, 4 (1992) 1, 7.

Supporting Mathematics or Mathematicians, SIAM NEWS (1993) and Notices A.M.S. (1993).

A Discussion of Cohen, Knoebel, Kurtz, and Pangelley's Chapter (with B.Y. White) in Mathematical Thinking and Problem Solving, ed. A.H. Schoenfeld, Lawrence Erlbaum, Hillside, N.J., 1994, pp. 209 - 220.

The First Decade of Calculus Reform, UME Trends, 6 (1995) 1-2.

Making Choices in Mathematics, AWM Newsletter, 25 (1995) 22-23.

Educating Mathematical Sciences Graduate Students, in Preserving Strength While Meeting Challenges, National Academy Press, Washington (1997) 41 - 44.

**BOOK REVIEW:**

Calculus Renewal: Issues for Undergraduate Mathematics Education in the Next Decade.  
Kluwer/Plenum

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