

## CURRICULUM VITA OF DR. ROBERT S. DORAN

### 1. ROBERT S. DORAN (r.doran@tcu.edu)

The John William and Helen Stubbs  
Potter Professor of Mathematics, Emeritus  
Texas Christian University  
Fort Worth, Texas 76129  
<https://cse.tcu.edu/mathematics/files/2021/DoranVita.pdf>

2. **Date and place of birth:** 21 December 1937. Winthrop, Iowa.

3. **Education:** University of Iowa, B. A. (1962); M. S. (1964)  
University of Washington, Ph.D. (1968)  
Ph.D. Thesis: *Representations of  $C^*$ -algebras by uniform CT-bundles and operator theory.*  
Thesis Advisors: Professors J. M. G. Fell and R. A. Gangolli

**Doran Wikipedia:** [http://en.wikipedia.org/wiki/Robert\\_S.\\_Doran](http://en.wikipedia.org/wiki/Robert_S._Doran)

**Math Genealogy:** <http://genealogy.math.ndsu.nodak.edu/id.php?id=11316>

**AMIAS Board IAS:** <http://www.ias.edu/people/amias/board>

**Mathematical Specialties:** Operator Algebras, Banach Algebras & Bundles, Harmonic Analysis, Representations of Locally Compact Groups, Banach Modules, and Approximate Identities

**Academic Honors:** Phi Beta Kappa (Liberal Arts Honor Society)  
Sigma Xi (Scientific Honor Society)  
Pi Mu Epsilon (Mathematics Honor Society)

### Selected Honors and Awards:

CASE-CARNEGIE U.S. National Gold Medalist (1989)  
CASE-CARNEGIE Texas Professor of the Year (1989)  
TCU Honors Professor of the Year (1993)  
Texas MAA Professor of the Year (1992)  
Minnie Stevens Piper Professor - Texas Statewide Award (1988)  
Chancellor's Award for Distinguished Teaching (1988)  
Lester Hook Phi Beta Kappa National Award (1991 - TCU Chapter nominee)  
Chancellor's Award for Distinguished Research Nominee (1991 and 1993)  
Senior Visiting Scholar, Oxford University, Oxford, England (Fall term 1988)  
Teaching Excellence Award, TCU House of Representatives (1987, 1991, 1993)  
Burlington Northern Foundation Faculty Achievement Award (1986)  
TCU Top Ten Professor, Teaching Excellence Award (1986, 1988)  
Mortar Board Preferred Professor (1986, 1987, 1994, 1995, 1996, 1998)  
Elected Trustee, Institute for Advanced Study, Princeton, Assoc. of Members of IAS,

(AMIAS) (1986)

President of the AMIAS Board (1990 – 2000)

President, TCU Chapter, Sigma Xi (1983-1984)

President, Phi Beta Kappa. (TCU Chapter (1989-1992).

Senior Visiting Scholar, Massachusetts Institute of Technology (1981)

Tom Brown-Jarvis Dorm Don, (1973, 1978)

Brachman Honors Professor (1975)

The John William and Helen Stubbs Potter Professor of Mathematics (1995 - 2016)

R F Cherry International Teaching Award, Nominee, Baylor University (2004)

#### **4. Formal continuing education associated with professional development**

#### **5. Professional certification (where applicable)**

#### **6. Present rank** Emeritus Professor of Mathematics (Potter Endowed Professorship)

#### **7. Year of appointment to TCU** 1969

#### **8. Year of last promotion** 1979 / Appointed Potter Professor 1995 - 2016

#### **9. Previous teaching and/or research appointments other than TCU**

(a) UNIVERSITY OF OXFORD, MATHEMATICAL INSTITUTE, Oxford, England (Senior Visiting Scholar, Fall, 1988, Queens College, Oxford).

(b) INSTITUTE FOR ADVANCED STUDY, PRINCETON (Member, 1981; Director and Chairman AMIAS Western Region, 1984. Board of Trustees AMIAS, since 1986; President of the AMIAS Institute Trustees Board, 1990-2000)

(c) MASSACHUSETTS INSTITUTE OF TECHNOLOGY (MIT Senior Visiting Scholar, 1981).

(d) UNIVERSITY OF TEXAS, AUSTIN (Twice, Professor 1979; 1980).

(e) UNIVERSITY OF NORTHERN IOWA, 1968-1969 (Assistant Professor)

#### **10. Previous professional positions (other than those listed in 9)**

#### **11. Courses taught at TCU**

(a) **Undergraduate:** Fundamentals of algebra; topics in mathematics; pre-calculus algebra; trigonometry; finite mathematics; business calculus; Calculus I, II, III; modern mathematics; advanced calculus; linear algebra; differential equations; elementary topology; abstract algebra I, II; mathematical analysis I, II.

(b) **Graduate:** Set theory; foundations of mathematics; real analysis; measure theory; Haar integral; general topology; topological groups; operators in Hilbert space; functional analysis; abstract harmonic

analysis; Banach algebras; von Neumann algebras; C\*-algebras; ergodic theory; representations of locally compact groups; seminars in functional analysis, operator algebras, operator theory, and Banach bundle theory.

## 12. External support sought and received

NSF Grant 1970 - 1971, \$15,873 Paul Halmos CBMS (with B L Sanders)  
NSF Grant 1972 -1973, \$15,532 George Mackey Ergodic Theory  
NSF Grant 1990 - 1991, \$19,468 Paul Muhly CBMS Operator Algebras  
NSF Grant 1996 - 1997, \$24,101 Goro Shimura CBMS (with Z Dou/G Gilbert)  
NSF Grant 2009 - 2010, \$33,088 Jonathan Rosenberg CBMS (with G Friedman)  
NSF Grant 2011 - 2012, \$34,997 Phillip Griffiths (with G Friedman /S Nollet)

## 13. Internal grants sought and received

TCU/RF Grant M7121, Ergodic Theory 1972, \$6,000.00.  
TCU Research Lectureship Fund 1990-1991, \$1,700.00.  
TCU Research Lectureship Fund 1991-1992, \$1,990.00.  
TCU Research Lectureship Fund 1992-1993, \$1,990.00.  
TCU Research Lectureship Fund 1993-1994, \$1,750.00.  
TCU Research Lectureship Fund 1994-1995, \$1,750.00.  
TCU Research Lectureship Fund 1995-1996, \$1,990.00.  
TCU Research Lectureship Fund 1996-1997, \$1,990.00.  
TCU Research Lectureship Fund 1997-1998, \$1,890.00

## 14. Graduate thesis (recitals) and dissertations

### Ph.D. Dissertations directed

Dr. Jerry W. Fields (1972), "Linear mappings of Banach algebras and Banach algebras of vector-valued functions."

Dr. Albert Wayne Tiller (1972), "P-commutative Banach \*-algebras, involutions, and extensions of pure positive functionals."

Dr. Josef Wichmann (1975), "The theory of Banach coalgebras."

Dr. Ronald L. Morgan (1979), "Szymanski properties in von Neumann algebras."

## 15. Research

### (a) Research articles and books:

[2016] Operator algebras and their applications: A tribute to Richard V. Kadison, Contemporary Mathematics, Volume 671, American Mathematical Society, Providence, R. I., with Efton Park (Editors), 2016 (book)

[2014] Hodge theory, complex geometry, and representation theory, Contemporary Mathematics, Volume 608, American Mathematical Society, Providence, R. I., 2011, with Greg Friedman and Scott Nollet (Editors), 311 pages. 2014 (book)

[2011] Harmonic analysis and reductive p-adic groups, Contemporary Mathematics, American Mathematical Society, Volume 543, Providence, R. I., 2011, with Paul J. Sally, Jr. and Loren Spice (Editors), 277 pages. 2011 (book)

[2010] Superstrings, geometry, topology, and C\*-algebras, Proceedings of the Symposia of Pure Mathematics, Volume 81, American Mathematical Society, Providence, R. I., with G. Friedman and J. Rosenberg (Editors). 249 pages. 2010 (book)

[2008] Group representations ergodic theory, and mathematical physics, Contemporary Mathematics, Volume . 449, American Mathematical Society, Providence, R. I., with C. C. Moore and R. J. Zimmer (Editors), 451 pages. 2008 (book)

[2004] Operator algebras, quantization, and non-commutative geometry, Contemporary Mathematics, Volume 365, American Mathematical Society, Providence, R. I., with R. V. Kadison (Editors) , 422 pages, 2004 (book)

[2000] The Mathematical Legacy of Harish-Chandra: A Celebration of Representation Theory and Harmonic Analysis, Proceedings of the Symposia for Pure Mathematics, Volume 68, American Mathematical Society, Providence, R. I., with V. S. Varadarajan (Editors) 551 pages, 2000 (book)

[1999] Automorphic forms, automorphic representations, and arithmetic. I. Editor with Z. Dou and G. Gilbert, 432 pages, Vol. 1, Proceedings of the Symposia for Pure Mathematics, American Mathematical Society, Providence, R. I., 1999 (book)

[1999] Automorphic forms, automorphic representations, and arithmetic. II. Editor with Z. Dou and G. Gilbert, 458 pages, Vol. 2, Proceedings of the Symposia for Pure Mathematics, American Mathematical Society, Providence, R. I., 1999 (book)

[1994] C\*-algebras: 1943-1993 (A fifty-year celebration), Editor, 401 pages, Vol. 167, Contemporary Mathematics, American Mathematical Society, Providence, R. I., 1994 (book)

[1990] Self-adjoint and non-selfadjoint operator algebras and operator theory, Editor, 217 pages, Vol. 120, Contemporary Mathematics, American Mathematical Society, Providence, R. I., 1990 (book)

[1990] Weak and strong continuity in topological spaces: Generalizations of continuity and preservation of topological properties, J. of Mathematics, 22 (1990), 27-28.

[1988] Pure state characterizations of P-commutative Banach \*-algebras, Manuscripta Mathematica, 61 (1988), 43-47 (with W. Tiller).

[1998] A CARE PACKAGE for undergraduate mathematics students, Mathematics in College, Fall/Winter (1988), 32-37.

- [1988] Representations of  $*$ -algebras, locally compact groups, and Banach  $*$ -algebraic bundles, Vol.1 (General representation theory of groups and algebras, 747 pages), Pure and Applied Mathematics #125, Academic Press, New York, 1988 (with J. M. G. Fell). (book)
- [1998] Representations of  $*$ -algebras, locally compact groups, and Banach  $*$ -algebraic bundles, Vol. 2 (Banach  $*$ -algebraic bundles, induced representations, and the generalized Mackey analysis, 763 pages), Pure and Applied Mathematics #126, Academic Press, New York, 1988 (with J. M. G. Fell). (book)
- [1986] Characterizations of  $C^*$ -algebras: The Gelfand-Naimark Theorems, Vol. #101, Pure and Applied Mathematics, (440 pages), Marcel-Dekker Publishing Company, 1986 (with V. A. Belfi). (book)
- [1984] Harmonic analysis and derivations on  $P$ -commutative Banach  $*$ -algebras, Notices of the American Mathematical Society 31(1984), January.
- [1983]  $P$ -Commutativity of the Banach algebra  $L_1(G)^{**}$ , Manuscripta Mathematica 43 (1983), 85-89 (with W. Tiller).
- [1982] History of functional analysis, J.Dieudonné, Bulletin of the American Mathematical Society 7 (1982), 403-409.
- [1982] Continuity of the involution in a Banach  $*$ -algebra, Tamkang Journal of Mathematics 13 (1982), 87-90 (with W. Tiller).
- [1981] Extensions of pure positive functionals on Banach  $*$ -algebras, Proceedings of the American Mathematical Society 82 (1981), 583-586 (with W. Tiller).
- [1980] Norm and spectral characterizations in Banach algebras, L'Enseignement Mathématique 26 (1980), 103-130 (with V. A. Belfi).
- [1980] An application of idempotents in the classification of complex algebras, Elemente der Mathematik 35 (1980), 16-17.
- [1980] Does there exist a Banach  $*$ -algebra without identity with no nonzero positive functionals?, American Mathematical Monthly 87 (1980), 474-475.
- [1979] Approximate identities and factorization of Banach modules, Lecture Notes in Mathematics #768, Springer-Verlag Publishing Company, 305 pages, Heidelberg-New York London, 1979 (with Josef Wichmann). (book)
- [1979] An integral representation theorem, Notices of the American Mathematical Society 26 (1979), 471.
- [1979] Essential subspaces in the dual of a Banach space, Notices of the American Mathematical Society 26 (1979), 100.
- [1977] The Gelfand-Naimark Theorems in  $C^*$ -algebras, L'Enseignement Mathématique 23 (1977), 153-180 (with Josef Wichmann).

- [1972] A generalization of a theorem of Civin and Yood on Banach  $*$ -algebras, *Bulletin of the London Mathematical Society* 4 (1972), 25-26.
- [1972] Does there exist more than one Banach  $*$ -algebra with discontinuous involution?, *American Mathematical Monthly* 79 (1972), 762-765.
- [1972] A theorem which is equivalent to the axiom of choice, *Elemente der Mathematik* 27 (1972), 127.
- [1971] An integral inequality, *Mathematics Magazine* 44 (1971), 267.
- [1971] If  $A$  is a symmetric  $*$ -algebra, is  $Ae$  symmetric?, *American Mathematical Monthly* 78 (1971), 178-179.
- [1970] On the cardinality of the alternating group, *Nieuw Archief* (3), 19 (1970), 171.
- [1970] Commuting elements in a free group, *Nieuw Archief* (1), 19 (1970), 78-79.
- [1968] Construction of uniform CT-bundles, *Notices of the American Mathematical Society* 5 (1968), 551.
- [1968] Representations of  $C^*$ -algebras by uniform CT-bundles and operator theory, Ph.D. Dissertation, 1968, University of Washington, Seattle, Washington, 128 pages.
- [1967] A noncompact uniform space, *American Mathematical Monthly* 74 (1967), 89-90.

**(b) Technical Reports and Lecture Notes.**

- P-commutative Banach  $*$ -algebras, (1988), 35 pages.
- Spectral Banach algebras, (1988), 43 pages.
- Group algebras of locally compact groups, (1987), 71 pages.
- Induced representations of locally compact groups, (1986), 130 pages.
- $C^*$ -algebras, (1984), 213 pages.
- Norm and spectral conditions in Banach algebras, (1980), 64 pages.
- Lectures on Banach algebras, (1975), 385 pages.
- Operators in Hilbert space, (1974) 160 pages (dittoed lecture notes).
- Lectures on functional analysis, (1973), 242 pages.
- Ergodic theory and group representations, (1972), 116 pages.

Characterizations of normed algebras with multiplicative norms, (1972), 33 pages

Lectures on mathematical analysis (1988), 212 pages.

Newspaper article that appeared in newspapers across the nation.  
Math skills are part of the formula for success, February 26, 1998.

**(c) MATHEMATICAL REVIEWS of Robert S. Doran (1971 – 2021) (see AMS Math Sci. on-line for complete list of over 500 reviews)**

### **FIVE “FEATURED” BOOK REVIEWS FOR MATHEMATICAL REVIEWS**

MR1943007 (2004g:46080) Takesaki, M. Theory of operator algebras. III. Encyclopaedia of Mathematical Sciences, 127. Operator Algebras and Non-commutative Geometry, 8. Springer-Verlag, Berlin, 2003. xxii+548 pp. ISBN: 3-540-42913-1 (Reviewer: Robert S. Doran) 46L10 (37A55 46L35 46L37 46L55) [Book-Featured Review]

MR1943006 (2004g:46079) Takesaki, M. Theory of operator algebras. II. Encyclopaedia of Mathematical Sciences, 125. Operator Algebras and Non-commutative Geometry, 6. Springer-Verlag, Berlin, 2003. xxii+518 pp. ISBN: 3-540-42914-X (Reviewer: Robert S. Doran) 46L10 (47L35 47L55) [Book-Featured Review]

MR 2002e:46002 Palmer, Theodore W. Banach algebras and the general theory of  $*$ -algebras. Vol. 2.  $*$ -algebras. Encyclopedia of Mathematics and its Applications, 79. Cambridge University Press, Cambridge, 2001. pp. i--xii and 795--1617. ISBN: 0-521-36638-0 (Reviewer: Robert S. Doran) 46-02 (46-01 46Kxx 46L05) [Book-Featured Review]

MR 2001m:22005 Anantharaman-Delaroche, C.; Renault, J. Amenable groupoids. With a foreword by Georges Skandalis and Appendix B by E. Germain. Monographies de L'Enseignement Mathématique [Monographs of L'Enseignement Mathématique], 36. L'Enseignement Mathématique, Geneva, 2000. 196 pp. ISBN: 2-940264-01-5 (Reviewer: Robert S. Doran) 22A22 (22D25 43A07 46L05 46L10 46L80) [Book-Featured Review]

MR 2000c:46108 Raeburn, Iain; Williams, Dana P. Morita equivalence and continuous-trace  $C^*$ -algebras. Mathematical Surveys and Monographs, 60. American Mathematical Society, Providence, RI, 1998. xiv+327 pp. ISBN: 0-8218-0860-5 (Reviewer: Robert S. Doran) 46L05 (22D99 46L55 46M20) [Book-Featured Review]

### **EIGHTEEN REGULAR BOOK REVIEWS FOR MATHEMATICAL REVIEWS**

MR1876952 (2003a:46006) Constantinescu, Corneliu  $C^*$ -algebras. Vol. 5. Selected topics. North-Holland Mathematical Library, 62. North-Holland Publishing Co., Amsterdam, 2001. xxii+600 pp. ISBN: 0-444-50753-1 (Reviewer: Robert S. Doran) 46-01 (46Lxx 47-01) (Book Review)

MR1858396 (2003a:46005) Constantinescu, Corneliu  $C^*$ -algebras. Vol. 4. Hilbert spaces. North-Holland Mathematical Library, 61. North-Holland Publishing Co., Amsterdam, 2001. xxii+574 pp. ISBN: 0-444-50752-3 (Reviewer: Robert S. Doran) 46-01 (46L08 47-01) (Book Review)

MR1858397 (2003a:46004) Constantinescu, Corneliu  $C^*$ -algebras. Vol. 3. General theory of  $C^*$ -algebras. North-Holland Mathematical Library, 60. North-Holland Publishing Co., Amsterdam, 2001. xxii+417 pp. ISBN: 0-444-50751-5 (Reviewer: Robert S. Doran) 46-01 (46Lxx) (Book Review)

MR1850359 (2003a:46003) Constantinescu, Corneliu  $C^*$ -algebras. Vol. 2. Banach algebras and compact operators. North-Holland Mathematical Library, 59. North-Holland Publishing Co., Amsterdam, 2001. xxii+597 pp. ISBN: 0-444-50750-7 (Reviewer: Robert S. Doran) 46-01 (47-01) (Book Review)

MR1850358 (2003a:46002) Constantinescu, Corneliu  $C^*$ -algebras. Vol. 1. Banach spaces. North-Holland Mathematical Library, 58. North-Holland Publishing Co., Amsterdam, 2001. xxii+375 pp. ISBN: 0-444-50749-3 (Reviewer: Robert S. Doran) 46-01 (47-01) (Book Review)

MR 98c:43001 Folland, Gerald B. A course in abstract harmonic analysis. Studies in Advanced Mathematics. CRC Press, Boca Raton, FL, 1995. x+276 pp. ISBN: 0-8493-8490-7 (Reviewer: Robert S. Doran) 43-01 (22-01 46-01) (Book Review)

MR 97i:46095 Davidson, Kenneth R.  $C^*$ -algebras by example. Fields Institute Monographs, 6. American Mathematical Society, Providence, RI, 1996. xiv+309 pp. ISBN: 0-8218-0599-1 (Reviewer: Robert S. Doran) 46Lxx (46-01) (Book Review)

MR 97i:46094 Fillmore, Peter A. A user's guide to operator algebras. Canadian Mathematical Society Series of Monographs and Advanced Texts. A Wiley-Interscience Publication. John Wiley & Sons, Inc., New York, 1996. xiv+223 pp. ISBN: 0-471-31135-9 (Reviewer: Robert S. Doran) 46Lxx (46-01) (Book Review)

MR 96k:46100 Lance, E. C. Hilbert  $C^*$ -modules. A toolkit for operator algebraists. London Mathematical Society Lecture Note Series, 210. Cambridge University Press, Cambridge, 1995. x+130 pp. ISBN: 0-521-47910-X (Reviewer: Robert S. Doran) 46L05 (46H25 46K05 46L80 46M05 47D25) (Book Review)

MR 94k:46124 Zhu, Ke He An introduction to operator algebras. Studies in Advanced Mathematics. CRC Press, Boca Raton, FL, 1993. x+157 pp. ISBN: 0-8493-7875-3 (Reviewer: Robert S. Doran) 46L05 (46-01 46L10) (Book Review)

MR 94b:46083 Li, Bing Ren Introduction to operator algebras. World Scientific Publishing Co., Inc., River Edge, NJ, 1992. xvi+738 pp. ISBN: 981-02-0941-X (Reviewer: Robert S. Doran) 46Lxx (46-01) (Book Review)

MR 92m:46084 Kadison, Richard V.; Ringrose, John R. Fundamentals of the theory of operator algebras. Vol. III. Special topics. Elementary theory---an exercise approach. Birkhäuser Boston, Inc., Boston, MA, 1991. xiv+273 pp. ISBN: 0-8176-3497-5 (Reviewer: Robert S. Doran) 46Lxx (46-01 47-01 47Dxx) (Book Review)



MR 92h:46082 Fragoulopoulou, Maria An introduction to the representation theory of topological  $*$ -algebras. Schriftenreihe des Mathematischen Instituts der Universität Münster, 2. Serie [Series of the Mathematical Institute of the University of Münster, Series 2], 48. Universität Münster, Mathematisches Institut, Münster, 1988. iv+81 pp. (Reviewer: Robert S. Doran) 46K10 (Book Review)

MR 93g:46052 Kadison, Richard V.; Ringrose, John R. Fundamentals of the theory of operator algebras. Vol. IV. Special topics. Advanced theory---an exercise approach. Birkhäuser Boston, Inc., Boston, MA, 1992. pp. i--xv and 274--859. ISBN: 0-8176-3498-3 (Reviewer: Robert S. Doran) 46Lxx (46-01 47-01 47Dxx) (Book Review)

MR 89b:46067 Beckhoff, Ferdinand Korovkin-Theorie in Algebren. (German) [Korovkin theory in algebras] Schriftenreihe des Mathematischen Instituts der Universität Münster, 2. Serie [Series of the Mathematical Institute of the University of Münster, Series 2], 45. Universität Münster, Mathematisches Institut, Münster, 1987. viii+145 pp. (Reviewer: Robert S. Doran) 46L05 (41A65 46J05 46K05 47D99) (Book Review)

MR 88d:46106 Kadison, Richard V.; Ringrose, John R. Fundamentals of the theory of operator algebras. Vol. II. Advanced theory. Pure and Applied Mathematics, 100. Academic Press, Inc., Orlando, FL, 1986. pp. i--xiv and 399--1074. ISBN: 0-12-393302-1 (Reviewer: Robert S. Doran) 46Lxx (46-01 46-02 47-01) (Book Review)

MR 85j:46099 Kadison, Richard V.; Ringrose, John R. Fundamentals of the theory of operator algebras. Vol. I. Elementary theory. Pure and Applied Mathematics, 100. Academic Press, Inc. [Harcourt Brace Jovanovich, Publishers], New York, 1983. xv+398 pp. ISBN: 0-12-393301-3 (Reviewer: Robert S. Doran) 46Lxx (46-01 46-02 47-01) (Book Review)

MR 83m:46084 Niestegge, Gerd Sätze vom Radon-Nikodym-Typ für Funktionale auf  $B^*$ -Algebren. (German) [Theorems of Radon-Nikodym type for functionals on  $B^*$ -algebras] Schriftenreihe des Mathematischen Instituts der Universität Münster, Ser. 2 [Series of the Mathematical Institute of the University of Münster, Ser. 2], 22. Universität Münster, Mathematisches Institut, Münster, 1981. i+80 pp. (Reviewer: Robert S. Doran) 46L05 (Book Review)

#### **OTHER SELECTED MATH REVIEWS:**

MR1919431 Kadison, Richard V. Which Singer is that? Surveys in Differential Geometry, 347--373, Surv. Differ. Geom., VII, International Press, Somerville, MA, 2000. (Reviewer: Robert S. Doran) 01A70 (01A60 46-03)

MR 2001c:46109 Exel, Ruy Partial representations and amenable Fell bundles over free groups. Pacific J. Math. 192 (2000), no. 1, 39--63. (Reviewer: Robert S. Doran) 46L05 (22D25 46M20)

MR 2000i:46046 Blecher, David P.; Muhly, Paul S.; Na, Qiyuan Morita equivalence of operator algebras and their  $C^*$ -envelopes. Bull. London Math. Soc. 31 (1999), no. 5, 581--591. (Reviewer: Robert S. Doran) 46L05 (16D90 46M05 47L30)

MR 2000f:46071 Exel, Ruy Unconditional integrability for dual actions. Bol. Soc. Brasil. Mat. (N.S.) 30 (1999), no. 1, 99--124. (Reviewer: Robert S. Doran) 46L05 (22D30 22D35 22F05 46M20)

- MR 2000b:46122 Kumjian, Alexander; Muhly, Paul S.; Renault, Jean N.; Williams, Dana P. The Brauer group of a locally compact groupoid. *Amer. J. Math.* 120 (1998), no. 5, 901--954. (Reviewer: Robert S. Doran) 46L55 (22D25 46M20)
- MR 2000a:46073 Somerset, D. W. B. Ideal spaces of Banach algebras. *Proc. London Math. Soc.* (3) 78 (1999), no. 2, 369--400. (Reviewer: Robert S. Doran) 46H10 (46J20 46L05 46M20)
- MR 2000a:46072 Somerset, D. W. B. Spectral synthesis for Banach algebras. *Quart. J. Math. Oxford Ser.* (2) 49 (1998), no. 196, 501--521. (Reviewer: Robert S. Doran) 46H10 (46H20 46J20 46L05)
- MR 99d:22025 Kolk, Johan A. C.; Varadarajan, V. S. On the transverse symbol of vectorial distributions and some applications to harmonic analysis. *Indag. Math. (N.S.)* 7 (1996), no. 1, 67--96. (Reviewer: Robert S. Doran) 22E46 (22E30 46E40 46F10)
- MR 99a:46131 Exel, Ruy Amenability for Fell bundles. *J. Reine Angew. Math.* 492 (1997), 41--73. (Reviewer: Robert S. Doran) 46M20 (46L55)
- MR 98m:43009 Datry, C.; Muraz, G. Analyse harmonique dans les modules de Banach. II. Presque-périodicité et ergodicité. (French) [Harmonic analysis in Banach modules. II. Almost periodicity and ergodicity] *Bull. Sci. Math.* 120 (1996), no. 6, 493--536. (Reviewer: Robert S. Doran) 43A45 (46H25 46M20)
- MR 98i:46055 Kumjian, Alex Fell bundles over groupoids. *Proc. Amer. Math. Soc.* 126 (1998), no. 4, 1115--1125. (Reviewer: Robert S. Doran) 46L05 (22A22 22D25 46M20)
- MR 97g:46074 Kirchberg, Eberhard Exact  $C^*$ -algebras, tensor products, and the classification of purely infinite algebras. *Proceedings of the International Congress of Mathematicians, Vol. 1, 2* (Zürich, 1994), 943--954, Birkhäuser, Basel, 1995. (Reviewer: Robert S. Doran) 46L05 (46L35 46M05 46M15)
- MR 97g:46072 Elliott, George A. The classification problem for amenable  $C^*$ -algebras. *Proceedings of the International Congress of Mathematicians, Vol. 1, 2* (Zürich, 1994), 922--932, Birkhäuser, Basel, 1995. (Reviewer: Robert S. Doran) 46L05 (46L35 46L80 46M15)
- MR 97e:46073 Exel, Ruy; Laca, Marcelo Continuous Fell bundles associated to measurable twisted actions. *Proc. Amer. Math. Soc.* 125 (1997), no. 3, 795--799. (Reviewer: Robert S. Doran) 46L05 (22D25 46M20)
- MR 96j:46059 Wong, Ngai Ching Left quotients of a  $C^*$ -algebra. I. Representation via vector sections. *J. Operator Theory* 32 (1994), no. 1, 185--201. (Reviewer: Robert S. Doran) 46L05 (46L35)
- MR 96i:43003 Datry, Christian; Muraz, Gilbert Analyse harmonique dans les modules de Banach. I. Propriétés générales. (French) [Harmonic analysis in Banach modules. I. General properties] *Bull. Sci. Math.* 119 (1995), no. 4, 299--337. (Reviewer: Robert S. Doran) 43A45 (46H25 46M20)
- MR 96g:46045 Kaniuth, Eberhard; Schlichting, Günter; Taylor, Keith F. Minimal primal and Glimm ideal spaces of group  $C^*$ -algebras. *J. Funct. Anal.* 130 (1995), no. 1, 43--76. (Reviewer: Robert S. Doran) 46L05 (22D25)

MR 96a:46131 Kitchen, J. W.; Robbins, D. A. Bundles of Banach algebras. II. Houston J. Math. 20 (1994), no. 3, 435--451. (Reviewer: Robert S. Doran) 46M20 (46H15 46H25 46K10)

MR 96a:46130 Kitchen, J. W.; Robbins, D. A. Bundles of Banach algebras. Internat. J. Math. Math. Sci. 17 (1994), no. 4, 671--680. (Reviewer: Robert S. Doran) 46M20 (46H15 46H25 46J25)

MR 96a:22006 Kaniuth, Eberhard Measures on locally compact groups whose Fourier-Stieltjes transforms vanish at infinity and group  $C^*$ -algebras. Math. Scand. 75 (1994), no. 1, 115--132. (Reviewer: Robert S. Doran) 22D15 (22D25 43A30 46L05)

MR 94j:46053 Yood, Bertram On Banach algebras with a Jordan involution. Dedicated to the memory of Professor Gottfried Köthe. Note Mat. 11 (1991), 331--333. (Reviewer: Robert S. Doran) 46K05 (46L05)

MR 94i:46070 Patterson, Paul L. Involutions on algebras arising from locally compact groups. Proc. Amer. Math. Soc. 121 (1994), no. 3, 739--745. (Reviewer: Robert S. Doran) 46K05 (43A10 43A20 46K10)

MR 94e:46101 Enock, Michel; Vallin, Jean-Michel  $C^*$ -algèbres de Kac et algèbres de Kac. (French) [Kac  $C^*$ -algebras and Kac algebras] Proc. London Math. Soc. (3) 66 (1993), no. 3, 619--650. (Reviewer: Robert S. Doran) 46L05 (22D25 22D35 46L10)

MR 93g:46058 Singh, Ajit Iqbal; Mittal, Neelam Complete finite representability in  $C^*$ -algebras. Yokohama Math. J. 38 (1991), no. 2, 83--94. (Reviewer: Robert S. Doran) 46L05 (46B08 46M07)

MR 93f:46091 Exel, Ruy; Loring, Terry A. Finite-dimensional representations of free product  $C^*$ -algebras. Internat. J. Math. 3 (1992), no. 4, 469--476. (Reviewer: Robert S. Doran) 46L05

MR 93f:46087 Blanchard, Étienne Représentations de champs de  $C^*$ -algèbres. (French) [Representations of fields of  $C^*$ -algebras] C. R. Acad. Sci. Paris Sér. I Math. 314 (1992), no. 12, 911--914. (Reviewer: Robert S. Doran) 46L05 (46M20)

MR 93d:46102 Paterson, Alan L. T. Invariant mean characterizations of von Neumann algebras. Indiana Univ. Math. J. 41 (1992), no. 1, 233--252. (Reviewer: Robert S. Doran)

MR 93c:43003 Gröchenig, Karlheinz; Kaniuth, Eberhard; Taylor, Keith F. Compact open sets in duals and projections in  $L_1$ -algebras of certain semi-direct product groups. Math. Proc. Cambridge Philos. Soc. 111 (1992), no. 3, 545--556. (Reviewer: Robert S. Doran) 43A20 (22D30 43A65)

MR 93b:46110 Dutta, Tarini Kumar Hermitian operators on  $C^*$ -algebras. Nat. Acad. Sci. Lett. 14 (1991), no. 8, 347--350. (Reviewer: Robert S. Doran) 46L05 (47B15)

MR 92k:46093 Zelazko, Wiesław On a problem of Fell and Doran. Colloq. Math. 62 (1991), no. 1, 31--37. (Reviewer: Robert S. Doran) 46K10 (46A03 47D30)

MR 92d:46141 Kadison, Richard V. Operator algebras---an overview. The legacy of John von Neumann (Hempstead, NY, 1988), 61--89, Proc. Sympos. Pure Math., 50, Amer. Math. Soc., Providence, RI, 1990. (Reviewer: Robert S. Doran) 46Lxx (01A60 46-03)

MR 88a:47044 Dixon, P. G. Left approximate identities in algebras of compact operators on Banach spaces. Proc. Roy. Soc. Edinburgh Sect. A 104 (1986), no. 1-2, 169--175. (Reviewer: Robert S. Doran) 47D30 (46H05 46H25 47B05)

MR 87f:46084 Saworotnow, Parfeny P. Diagonalization of a selfadjoint operator acting on a Hilbert module. Internat. J. Math. Math. Sci. 8 (1985), no. 4, 669--675. (Reviewer: Robert S. Doran) 46H25 (46K15)

MR 87b:46061 Magyar, Zoltán; Sebestyén, Zoltán On the definition of  $C^*$ -algebras. II. Canad. J. Math. 37 (1985), no. 4, 664--681. (Reviewer: Robert S. Doran) 46K05

MR 86a:46051 Takahasi, Sin-ei Remarks on quasicentral approximate identities. Manuscripta Math. 47 (1984), no. 1-3, 229--232. (Reviewer: Robert S. Doran) 46H05

MR 83a:22009 Mayer-Lindenberg, Fritz Zur Dualitätstheorie symmetrischer Paare. (German) [On the duality theory of symmetric pairs] J. Reine Angew. Math. 321 (1981), 36--52. (Reviewer: Robert S. Doran) 22D45 (22D25 43A85)

MR 81i:46055 Aupetit, Bernard Propriétés spectrales des algèbres de Banach. (French) [Spectral properties of Banach algebras] Lecture Notes in Mathematics, 735. Springer, Berlin, 1979. xii+192 pp. ISBN: 3-540-09531-4 (Reviewer: Robert S. Doran) 46H05 (46-02) (Book Review)

MR 81b:22008 Mayer-Lindenberg, Fritz Invariante Spuren auf Gruppenalgebren. (German) J. Reine Angew. Math. 310 (1979), 204--213. (Reviewer: Robert S. Doran) 22D25 (43A65 46L05)

MR 80h:46091 Gootman, Elliot C.; Rosenberg, Jonathan The structure of crossed product  $C^*$ -algebras: a proof of the generalized Effros-Hahn conjecture. Invent. Math. 52 (1979), no. 3, 283--298. (Reviewer: Robert S. Doran) 46L05 (22D25)

MR 80g:46044 Soldatov, A. P. On the Noether theory of operators. (Russian) Dokl. Akad. Nauk SSSR 238 (1978), no. 2, 281--284. (Reviewer: Robert S. Doran) 46H05 (46M99 47A53)

MR 80f:22002 Fabec, Raymond C. A theorem on extending representations. Proc. Amer. Math. Soc. 75 (1979), no. 1, 157--162. (Reviewer: Robert S. Doran) 22D10

MR 80d:46117 Promislow, David Dimension of null spaces with applications to group rings. Canad. J. Math. 30 (1978), no. 2, 289--300. (Reviewer: Robert S. Doran) 46L10 (22D25)

MR 80c:47036 Samarskiĭ, V. G. The construction of an operator ideal by means of Bernstein's  $s$ -numbers. (Russian) Vestnik Leningrad. Univ. Mat. Mekh. Astronom. 1978, vyp. 1, 77--80, 156. (Reviewer: Robert S. Doran) 47D30 (46B20)

MR 58 #17924 Porozhenko, A. G. Strong convergence of sequences and of directions of selfadjoint operators. (Russian) Functional analysis, No. 3 (Russian), pp. 146--155. Ul'yanovsk. Gos. Univ., Ulyanovsk, 1974. (Reviewer: Robert S. Doran) 47A55 (47B25)

MR 58 #16990 Ol'shanskiĭ, G. I. Unitary representations of the infinite-dimensional classical groups  $U(p, \infty)$ ,  $SO(0)(p, \infty)$ ,  $Sp(p, \infty)$  and the corresponding motion groups. (Russian) Dokl. Akad. Nauk SSSR 238 (1978), no. 6, 1295--1298. (Reviewer: Robert S. Doran) 22E65

MR 56 #16376 McKennon, Kelly Quasi-multipliers. Trans. Amer. Math. Soc. 233 (1977), 105--123. (Reviewer: Robert S. Doran) 46H05 (43A22 46L05)

MR 56 #5779 Rosenberg, Jonathan The  $C^*$ -algebras of some real and  $p$ -adic solvable groups. Pacific J. Math. 65 (1976), no. 1, 175--192. (Reviewer: Robert S. Doran) 22D25 (22E25)

MR 55 #3154 Sund, Terje A note on integrable representations. Proc. Amer. Math. Soc. 59 (1976), no. 2, 358--360. (Reviewer: Robert S. Doran) 22D30

MR 53 #14150 Lee, Ru Ying On the  $C^*$ -algebras of operator fields. Indiana Univ. Math. J. 25 (1976), no. 4, 303--314. (Reviewer: Robert S. Doran) 46L05

MR 52 #15026 Phillips, John A note on square-integrable representations. J. Functional Analysis 20 (1975), no. 1, 83-92. (Reviewer: Robert S. Doran) 46K15 (22D10)

MR 53 #13476 Funakosi, Shunsuke A decomposition theory for unitary representations of sigma-compact Lie group. Math. Sem. Notes Kobe Univ. 2 (1974), no. 2, paper no. XIV, 13 pp. (Reviewer: Robert S. Doran) 22E45

MR 52 #15029 Pedersen, Gert Kjaergård Borel structure in operator algebras. Mat.-Fys. Medd. Danske Vid. Selsk. 39, no. 5, 13 pp. (1974). (Reviewer: Robert S. Doran) 46L05

MR 52 #6450 Lodkin, A. A. A lemma on the approximation of finite-dimensional  $*$ -algebras. (Russian) Investigations on linear operators and the theory of functions, V. Zap. Naučn. Sem. Leningrad. Otdel. Mat. Inst. Steklov. (LOMI) 47 (1974), 175--178, 190, 194--195. (Reviewer: Robert S. Doran) 46L10

MR 52 #6450 Plotkin, A. I. Norms of convolutions determine the function. (Russian) Investigations on linear operators and the theory of functions, V. Zap. Naučn. Sem. Leningrad. Otdel. Mat. Inst. Steklov. (LOMI) 47 (1974), 179--181, 190, 195. (Reviewer: Robert S. Doran) 43A15

MR 51 #11118 Sebestyén, Z. On the definition of  $C^*$ -algebras. Publ. Math. Debrecen 21 (1974), 207--217. (Reviewer: Robert S. Doran) 46K05 (46L05)

MR 50 #14249 Palmer, T. W. Characterizations of  $W^*$ -homomorphisms and expectations. Proc. Amer. Math. Soc. 46 (1974), 265--272. (Reviewer: Robert S. Doran) 46K99

MR 50 #14246 Gorin, E. A. Spectral stability of certain Banach algebras. (Russian) Funkcional. Anal. i Priložen. 8 (1974), no. 2, 73--74. (Reviewer: Robert S. Doran) 46J20

MR 50 #14245 Fel'dman, G. M. The semisimplicity of an algebra generated by an isometric operator. (Russian) Funkcional. Anal. i Priložen. 8 (1974), no. 2, 93--94. (Reviewer: Robert S. Doran) 46J20 (43A45 47C05)

- MR 50 #10845 Olesen, Dorte; Pedersen, Gert K. Derivations of  $C^*$ -algebras have semi-continuous generators. *Pacific J. Math.* 53 (1974), 563–572. (Reviewer: Robert S. Doran) 46L10
- MR 47 #2378 Collins, H. S.; Fontenot, R. A. Approximate identities and the strict topology. *Pacific J. Math.* 43 (1972), 63–79. (Reviewer: Robert S. Doran) 46K05
- MR 46 #9687 Porol'skin, A. G. Partially ordered spaces of normal operators. (Russian) *Leningrad. Gos. Ped. Inst. U\v cen. Zap.* 496 (1972), no. 2, 294–330. (Reviewer: Robert S. Doran) 46A40 (47B15)
- MR0358378 Olesen, Dorte Derivations of  $AW^*$ -algebras are inner. *Pacific J. Math.* 53 (1974), 555–561. (Reviewer: Robert S. Doran) 46L10
- MR0340979 Veron, A. Positive definite operator-valued functions in a Banach space. (Russian) *Sakharth. SSR Mecn. Akad. Moambe* 71 (1973), 297–300. (Reviewer: Robert S. Doran) 43A35
- MR0326303 Levina, N. B. The inverse Wiener-Lévy theorem. (Russian) *Funkcional. Anal. i Priložen.* 7 (1973), no. 3, 84–85. (Reviewer: Robert S. Doran) 43A15
- MR0409719 Fell, J. M. G. A new look at Mackey's imprimitivity theorem. *Conference on Harmonic Analysis (Univ. Maryland, College Park, Md., 1971)*, pp. 43–58. *Lecture Notes in Math.*, Vol. 266, Springer, Berlin, 1972. (Reviewer: Robert S. Doran) 22D30 (46K10)
- MR0341119 Johnson, B. E.; Parrott, S. K. Operators commuting with a von Neumann algebra modulo the set of compact operators. *J. Functional Analysis* 11 (1972), 39–61. (Reviewer: Robert S. Doran) 46L10
- MR0313824 Collins, H. S.; Fontenot, R. A. Approximate identities and the strict topology. *Pacific J. Math.* 43 (1972), 63–79. (Reviewer: Robert S. Doran) 46K05
- MR0304552 Kac, G. I. Certain arithmetic properties of ring groups. (Russian) *Funkcional. Anal. i Priložen.* 6 (1972), no. 2, 88–90. (Reviewer: Robert S. Doran) 22D25 (20C99 46N05)
- MR0301521 Golodec, V. Ja. Spectral properties of modular operators. (Russian) *Funkcional. Anal. i Priložen.* 6 (1972), no. 1, 70–72. (Reviewer: Robert S. Doran) 46L10
- MR0295089 Barnes, Bruce A. Pure states with the restriction property. *Proc. Amer. Math. Soc.* 33 (1972), 491–494. (Reviewer: Robert S. Doran) 46L05
- MR0294569 Štern, A. I. The connection between the topologies of a locally bicomact group and its dual space. (Russian) *Funkcional. Anal. i Priložen.* 5 (1971), no. 4, 56–63. (Reviewer: Robert S. Doran) 22D05 (46L05)
- MR0294566 Konjušihina, T. N. Decomposition of the Kronecker product of two representations of the fundamental series of the special group of second order matrices over the quaternion field. (Russian) *Dokl. Akad. Nauk SSSR* 201 (1971), 266–269. (Reviewer: Robert S. Doran) 20G05
- MR0294566 Konjušihina, T. N. Decomposition of the Kronecker product of two representations of the fundamental series of the special group of second order matrices over the quaternion field. (Russian) *Dokl. Akad. Nauk SSSR* 201 (1971), 266–269. (Reviewer: Robert S. Doran) 20G05

## **16. Papers, participation on panels, etc. at scholarly meetings & colloquia:**

Organizer of AMS Special Session: “Operator algebras and their applications” (with Efton Park)), San Antonio, TX., January 10-11, 2015, AMS winter Meeting.

Annual Board Meeting, Institute for Advanced Study, Princeton, New Jersey, November 6, 2012. Association of Members of the Institute for Advanced Study.

Organizer of AMS Special Session: “Harmonic analysis on reductive p-adic groups” (with Paul J. Sally and Loren Spice), San Francisco, CA., January 16, 2010, AMS winter Meeting.

Annual Board Meeting, Institute for Advanced Study, Princeton, New Jersey, November 12, 2010. Association of Members of the Institute for Advanced Study.

Organizer of NSF-CBMS Conference “Topology, C\*-algebras, and string duality,” with Greg Friedman, May 17-2009. Jonathan Rosenberg, principal lecturer.

Institute for Advanced Study conference and Annual Board Meeting, April 4, 2008, Princeton, New Jersey.

Invited keynote speaker, 2007 Jim Bolen Mathematics Award Ceremony, TCC, April 23, 2007, Fort Worth, Texas.

Invited keynote speaker, 2003 Jim Bolen Mathematics Award Ceremony, TCC, The Wonder of Mathematical discovery, April 25, 2003, Fort Worth, Texas.

Institute for Advanced Study conference and Annual Board Meeting, April 4, 2003, Princeton, New Jersey.

Organizer of AMS Special Session: “Operator Algebras, Quantization, and Non-commutative Geometry.” (with R. V. Kadison), Baltimore, MD., January 15-16, , 2003, AMS winter Meeting.

Institute for Advanced Study conference and Board Meeting, March 2002, Princeto New Jersey.

Institute for Advanced Study conference and Board Meeting, March 2001, Princeton New Jersey.

Mathematics Conference Honoring the Memory of Andre Weil, January 8-9, 1999, Director, Institute for Advanced Study, Princeton, New Jersey.

Conference Director at the Institute for Advanced Study, President, Board of Trustees, Association of Members of the Institute for Advanced Study, March 14-15, 1998, Princeton, New Jersey.

Invited Speaker, Baylor Mathematics Colloquium, November 13, 1997 at Baylor University, Waco, Texas. "Problems in Symmetric Banach \*-Algebras."

Director of Biennial Conference of the Institute for Advanced Study, President, Board of Trustees, Association of Members of the Institute for Advanced Study, May 14-15, 1997, Princeton, New Jersey.

Organizer and Director of Mathematics Research Conference, Institute for Advanced Study, Princeton, New Jersey, May 21-22, 1996.

Invited Keynote speaker, "What makes mathematics so special?" MAA conference, Mathematical Association of America, Stephen F. Austin University, October 7, 1994.

Invited speaker, "Solution of a famous unsolved problem," Parabola meeting, Texas Christian University, September 20, 1994.

Master of Ceremonies, Research Conference Twentieth Anniversary Celebration of the Association of Members of the Institute for Advanced Study, Princeton, N. J., May 20-21, 1994.

Invited speaker, "Reflections of the 1992 MAA Texas Professor of the Year," Spring meeting, Texas Section of the MAA, Abilene, Texas April 3, 1993.

Invited speaker, "One of America's great mathematicians: Marshall H. Stone," Parabola meeting, TCU, March 24, 1993.

Organizer and director of Special Session entitled "C\*-algebras 1943-1993 (A fifty year celebration)," combined AMS-MAA winter meeting, San Antonio, Texas, January 13-16, 1993.

American Mathematical Society Library Committee Panel Discussion, "The high cost of periodicals," AMS meeting, San Antonio, Texas, January 14, 1993.

Invited speaker, "Axioms for C\*-algebras, symmetric algebras, and a problem of Kaplansky," University of Texas, Arlington, November 4, 1992.

MAA meeting, University of Houston, Recipient of 1992 MAA Texas Professor of the Year award, Houston, Texas, April 9-11, 1992.

Program, Deane Montgomery Memorial Service, Institute for Advanced Study, Princeton, New Jersey, October 19, 1992.

Invited speaker, "Marshall H. Stone—Mathematician and Friend of the Institute," Spring meeting, 9th biennial AMIAS Conference Lectures, Institute for Advanced Study, May 21-22, 1992.

Spring meeting, Institute for Advanced Study, Princeton, May 23-24, 1991, President of the Board, "Board of Trustees Meeting," AMIAS, 1991.

Invited One Hour speaker, "M. H. Stone, the man and his mathematics," Great Plains Operator Theory Conference, Texas A & M University, College Station, May 15-18, 1991.

Invited speaker, "The beauty of Mathematics," University of Dallas, Irving, Texas, April 23, 1991.



Contributed paper, "Continuity of the involution in Banach  $*$ -algebras," Spring Meeting, Texas Section Mathematical Association of America, April 8, 1991, Nacogdoches, Texas.

Invited speaker, TCJC Cornerstone Honors Program, "Mathematics—its meaning and significance," February 25, 1991, TCJC, South Campus, Fort Worth, Texas.

Invited speaker, "Adventures into the infinite," Trinity Valley High School, Fort Worth, November 12, 1990.

Invited speaker, "What do mathematicians do?," Southwest High School, Fort Worth, November 19, 1990.

Invited speaker, "Varieties of mathematical experience," Fort Worth Country Day High School, November 28, 1990.

Director and organizer, National Science Foundation, "Coordinates in operator algebra: Groupoids and categories, their representations and applications," NSF-CBMS Regional Conference, Dr. Paul Muhly, May 20-26, 1990, Texas Christian University, Fort Worth, Texas, Grant Number NSF #524460.

Invited speaker: "Award winning teaching: Reflections of a Piper Professor and CASE Gold Medalist," Spring Meeting, MAA, April 6, 1990, University of North Texas, Denton, Texas.

Director and Organizer of AMS Special Session, "Group Representations and Operator Algebras," Louisville, Kentucky, January 17-20, 1990.

Contributed paper, "A survey of the theory of P-commutative Banach  $*$ -algebras," MAA, Texas Section Spring Meeting, April 8, 1989.

Invited speaker, "Axioms for  $C^*$ -algebras: A solution to a problem of Kaplansky," Oxford Functional Analysis Seminar, University of Oxford, October 18, 1988.

Invited speaker, "The structure of  $C^*$ -algebras and symmetric  $*$ -algebras," Seminar, King's College, University of London, November 3, 1988.

Invited speaker, "Characterizations of  $C^*$ -algebras: From Gelfand-Naimark to Dauns-Hofmann and beyond," University of Edinburgh, Edinburgh, Scotland, November 28, 1988. (Functional Analysis Seminar).

Invited speaker: "Symmetric  $*$ -algebras: Old and new problems," University of Glasgow, Glasgow, Scotland, November 29, 1988. (Functional Analysis Seminar).

Invited speaker, "Spectral algebras: A new generalization of Banach algebras," Yorkshire Functional Analysis Group, University of Sheffield, Sheffield, England, December 13, 1988. (Functional Analysis Seminar).

Contributed paper, "The Peter-Weyl Theorem for compact groups," Spring Meeting, Texas Section Mathematical Association of America, April 15, 1988, Trinity University, San Antonio, Texas.

Parabola Mathematics Club speaker, "The ABC's of the CBS inequality," January 19, 1988, TCU Mathematics Club.

Parabola Mathematics Club speaker, "Mathematics made difficult: A look at lines through the origin," September 20, 1988, TCU Mathematics Club.

Invited participant, Great Plains Operator Theory Seminar, Conference. Topic: "K-Theory in operator algebras," University of Kansas, Lawrence, Kansas, May 27-30, 1987.

Spring meeting, Institute for Advanced Study, Princeton, May 20-23, 1987. "Board of Trustees of AMIAS," 1987.

Invited one hour speaker, "Axioms for C\*-algebras: Flying by Instruments," Mathematical Association of America, Annual Spring Meeting, Texas Section, April 2-4, 1987, Tarleton State University, Stephenville, Texas.

INTERNATIONAL CONGRESS OF MATHEMATICIANS, August 2-11, 1986, University of California, Berkeley, California.

Invited participant, Institute for Advanced Study, Princeton, May 14-19, 1986. "Twelfth Anniversary of the Association of Members of the Institute for Advanced Study."

Invited participant, MATHEMATICAL SCIENCES RESEARCH INSTITUTE, Berkeley, California, May 21-23, 1985. Group Representation Conference in Honor of Professor George W. Mackey of Harvard University.

Contributed paper, American Mathematical Society, Annual Winter Meeting, Louisville, Kentucky, January 28, 1984. "Harmonic Analysis and Derivations of P-commutative Banach \*-Algebras."

Chairman, "Session on Banach algebras," Winter Meeting, American Mathematical Society, January 28, 1984, Louisville, Kentucky.

Contributed paper, Mathematical Association of America, Annual Spring Meeting, Texas Section, April 6-7, 1984, University of Texas at Tyler, Tyler, Texas. "Decompositions of Operators with Closed Range."

Invited speaker, Parabola Mathematics Club, Texas Christian University, March 27, 1984. "Mathematical Axioms: Why do we use them?"

Invited speaker, In-Service Institute for High School Mathematics Teachers, Birdville Independent Public Schools, October 20, 1983. "Optical Illusions and Mathematics."

Invited participant, Great Plains Operator Theory Seminar, "Recent Developments in Operator Algebras." Conference Topic: "The theory and applications of completely positive maps and completely bounded maps," University of Colorado, Boulder, Colorado, June 1-3, 1983.

Contributed paper, Mathematical Association of America, Annual Spring Meeting, Texas Section, April 8, 1983. "Axioms for C\*-algebras: A survey from 1943 to 1983."

Invited speaker, High School Mathematics Club, Irving High School, Irving, Texas, February 8, 1983. "Paradoxes and Infinity: Some surprising results."

Invited speaker, Institute for Advanced Study, Princeton, (Bi-annual Conference), June 1-3, 1982. Topic: "Problems in Symmetric  $*$ -Algebras."

Invited participant, National Science Foundation (CBMS) Conference on: "Automorphism Groups of von Neumann Algebras and the Structure of Factors," University of Iowa, Iowa City, Iowa, April 26-30, 1982.

Contributed paper, Mathematical Association of America, Annual Spring Meeting, Texas Section, April 2, 1982, Lamar University, Beaumont, Texas. "The Banach Algebra  $L_1(G)**$  is P-commutative."

Colloquium Speaker, TCU Department of Mathematics, January 21, 1982, "Recent Research on Symmetric and Hermitian  $*$ -algebras."

Invited speaker, Harvard-Massachusetts Institute of Technology Mathematics Colloquium, March 12, 1981, Massachusetts Institute of Technology, Cambridge, Massachusetts. Topic: "Extensions of Pure States."

Invited Speaker, Texas A & M Mathematics Colloquium, Texas A & M University, College Station, Texas, February 14, 1980. Topic: "Symmetric  $*$ -Algebras: A Solution to a Problem of Kaplansky."

Colloquium Speaker, Texas Christian University, Department of Mathematics, January 24, 1980. Topic: "A Generalized Schwarz Inequality."

Director & Organizer, by invitation of the American Mathematical Society, of AMS SPECIAL SESSION entitled " $C^*$ -Algebras and Operator Theory," Annual Winter Meeting of the Society, January 3, 1980, San Antonio, Texas.

Invited participant, "Scottish Book (Mathematical) Conference," May, 1979, North Texas State University, Denton, Texas.

Invited Speaker, Texas Academy of Science, University of Texas, Arlington, Texas, March 10, 1979. Topic: "Polar Decomposition in  $C^*$ -algebras."

Invited Speaker, Castleberry Mathematics Club, Fort Worth, Texas, October 17, 1979. "Some exciting and remarkable theorems in mathematics."

Colloquium Speaker, University of Texas, Arlington, 1977, August. Topic: "Automatic Continuity of Positive Linear Functionals on Banach  $*$ -Algebras."

Contributed paper, Mathematical Association of America, Annual Spring Meeting, Texas Section, April, 1976. Topic: "Characterizations of Normed Algebras."

Colloquium Speaker, University of Texas, Arlington, 1974, March 5. Topic: "The Functional Calculus in Banach Algebras: A Power Package."

Invited Speaker, University of Texas, Austin, Mathematics Colloquium, February 19, 1973. Topic: "Axioms for  $C^*$ -Algebras and Related Problems."

Invited Speaker, Kansas State University Mathematics Colloquium, Manhattan, Kansas, March 29, 1973. Topic: "The Remarkable Gelfand-Naimark Theorems for  $C^*$ -Algebras."

Colloquium Speaker, University of Northern Iowa, September, 1973. Topic: "Bundles in Functional Analysis: How They Are Used?"

Colloquium Speaker, University of Texas, Arlington, March 5, 1973. Topic: "Continuity and discontinuity of linear operators."

Colloquium Speaker, TCU Department of Mathematics, November 22, 1973. Topic: "Representations in fiber bundles: An Introduction."

Chairman, "Abstract Harmonic Analysis Session," American Mathematical Society, Annual Winter Meeting, January, 1973, San Francisco, California.

Colloquium Speaker, TCU Department of Mathematics, February 10, 1972. Topic: "Continuity in Banach Algebras."

Director and Organizer of Week-long RESEARCH CONFERENCE at TCU. Topic of Conference: "Statistical Mechanics and Ergodic Theory." June, 1972. Invited Lecturer: Dr. George W. Mackey, Walker Ames and Landon D. Clay Professor of Mathematics, Harvard University. Conference Supported by TCU/RF-Grant #M7121.

Contributed paper, American Mathematical Society, Annual Winter Meeting, January, 1971. Topic: "The Structure of  $C^*$ -Algebras in Uniform CT-bundles."

Invited participant, INTERNATIONAL CONFERENCE ON ABSTRACT HARMONIC ANALYSIS, University of Maryland, College Park, Maryland, November 7-12, 1971.

Associate Director of NSF-CBMS Regional Conference, Ten Problems in Hilbert Space, Principal Lecturer: Dr. Paul Halmos, June, 1970, Texas Christian University, Fort Worth, Texas.

Contributed paper, American Mathematical Society, Annual Winter Meeting, January, 1969, New Orleans, Louisiana. Topic: "Construction of Uniform CT-bundles."

Invited Speaker, Iowa Academy of Science, Iowa Section of the Mathematical Association of America, Cedar Falls, Iowa, April, 1969. Topic: "Representations of  $C^*$ -Algebras."

Colloquium Speaker, University of Washington, Seattle, Washington, May, 1968. Topic: "Bundles and Representations of  $C^*$ -Algebras."

Participant, FUNCTIONAL ANALYSIS SYMPOSIUM, Battelle Institute, 1968, Seattle, Washington. Topic: "Representations of locally compact groups and von Neumann algebras."

Invited Speaker, Fort Worth Public School In-Service Institute for High School Mathematics Teachers, Western Hills High School, Fall, 1975. "What Makes a Good Teacher?"

Invited Speaker, Fort Worth Public School In-Service Institute for High School Mathematics Teachers, Western Hills School, Fall, 1974. “The Universal Language: Is it Mathematics?”

### **17. Academic advising activities**

Advisor 47 years in every capacity (majors, pre-majors, and transfer advising)

### **18. Departmental Service**

Graduate Committee; Executive Committee;

Advisory Committee;

Self-Study Committee;

Library Committee;

Summer Departmental Chair (1978, 1980, 1989, 1990-2008). (Served on most departmental committees many times over 47 years.)

Calculus Bee, Founder & organizer from 1981 — 2008

### **Service to the profession:**

Reviewer for National Science Foundation Research Proposals.

Reviewer for the Bulletin of the American Mathematical Society.

Reviewer for Zentralblatt (German review journal).

### **Referee for the following mathematics journals:**

Journal of the American Mathematical Society

Proceedings of the American Mathematical Society

Pacific Journal of Mathematics

Duke Mathematical Journal

American Mathematical Monthly

Journal of Functional Analysis

Journal of Mathematical Analysis & Applications

Bulletin of the American Mathematical Society

Bulletin of the Mexican Mathematical Society

Forum Mathematicum

Houston Journal of Mathematics

Michigan Journal of Mathematics

Rocky Mountain Journal of Mathematics

Publicationes Mathematicae Debrecen

Journal of the London Mathematical Society

Proceedings of the London Mathematical Society

Proceedings of the Edinburgh Mathematical Society

Texas Journal of Science

L'Enseignement Mathématique

Canadian Mathematical Bulletin  
International Journal of Mathematics  
Bulletin of the Calcutta Mathematical Society  
Proceedings of the Royal Society of Edinburgh

**Mathematical Consultant:**

Cambridge University Press (Mathematics editor 1988 - present).  
John Wiley Publishing Company  
Addison-Wesley Publishing Company  
Harper and Row Publishing Company  
Holt, Reinhardt and Winston Publishing Company  
American Mathematical Society  
Mathematical Association of America

**19. College service**

President, Sigma Xi (Science Honor Society), 1983 – 1984  
Served on numerous College committees over 47 years

**20. University Committees:**

Research Committee  
Skills Development Committee  
Select Series Committee  
Library Committee  
Engineering Feasibility Committee  
Core Curriculum Committee  
University Wide Teacher Education Committee  
Fulbright, Rhodes, and Marshall Scholarship Committee 1990-1995  
Honors Week Committee, 1989-1994; 1995-1999; 1999-2004  
Honors Council, 1995-1999; 1999-2004  
Teacher Admission and Retention Committee, 1989-99  
Mathematics and Science Education Subcommittee, 1989-2000  
Development Committee, (Bronson Davis, chair), 1992-1997

**21. Other University Service/community activities related to professional skills**

Chair, Department of Mathematics 1990 – 2011 (21 years)  
TCU Representative to select TANDY TEACHER SCHOLARS FWISD  
Tandy Corporation, Fort Worth, Texas (1987 AND 1988)  
Chair, Phi Beta Kappa Members in Course Committee (1987-1992; 1999)  
Vice President, Phi Beta Kappa (1988-1990)  
President, Phi Beta Kappa (1990-1992)

**Faculty Sponsor:**

Parabola Mathematics Club, 1970 - 1979 (ten years)  
Alpha Lambda-Delta National Honor Society (1977-1978, 1988-1989).

Campus Crusade for Christ 1973 – 2014  
TCU Chapter of Young Life, 1986 - 2012  
Beta Upsilon Chi (BUX), 1989 - 2014  
Mortar Board, 1993 – 1995

**Premajor Advisor: 1976-1980, 1984-1990.**

Orientation Freshman Advisor; Faculty Partner, 1989-2003 .  
Mathematics department representative: Mondays at TCU  
Mathematics department representative: UNPR-Class-Self-Assessment and Career Exploration.  
Mathematics department representative: TCU Athletic department for recruiting athletes.  
MAA Beckenbach Award Prize Committee ; Appointed by MAA President Leonard Gillman 1989 - 2000. Appointed Committee Chair, 1991 - 1992.  
AMS Library Committee, 1989-2004, Appointed by AMS President W. Browder of AMS.  
Campus Mentor Program, 1989 - 2000.  
TCU Mathematics Research Lectureship Coordinator.  
President, Sigma Xi, 1983 - 1984.  
Summer Orientation Review Committee, 1997 - 99.  
Faculty Marshall, 1994 - 1999  
Listed in TCU “On Call” booklet for community service.  
Speaker at Mathematics In-Service Institute for teachers.  
Speaker for High School Mathematics Clubs.  
Speaker for students in “Institute for Gifted Students.”

**22. Memberships held in professional organizations:**

Phi Beta Kappa.  
Sigma Xi Scientific Honor Society.  
Pi Mu Epsilon Mathematics Honor Society.  
American Mathematical Society.  
Mathematical Association of America.  
Institute for Advanced Study, Association of Members (AMIAS)

**23. Honors and Awards: See Number 3 above:**

**24. Other activities not included in any of the above categories**

- Organizer and Director of four Regional NSF Mathematics Conferences
- Director of five AMS Special Sessions at National Meetings of the AMS

**25. Military service**

- 1956-1958: U. S. Army Airborne (82nd Airborne Division), Fort Bragg, N.C.
- U. S. Army Special Forces
- Jungle Survival Instructor, U. S. Army Jungle Warfare Survival Center, Fort Sherman, Colón, Panama.