Archie G. Gibson

Curriculum Vitae

ADDRESS:

Department of Mathematics and Statistics
University of New Mexico
Albuquerque, New Mexico 87131
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EDUCATION:

High School Diploma, 1957, College High School, Greeley, Colorado

B.S. 1962, University of Colorado, (Boulder), Applied Mathematics, (with honors)

B.S. 1962, University of Colorado, (Boulder), Business

Ph.D. 1966, University of Colorado, (Boulder), Applied Mathematics
    Thesis Title: *Triples of Operator-Valued Functions Related to the Unit Circle*
    Advisor: Robert McKelvey

EMPLOYMENT:

Assistant Professor of Mathematics, 1966-68
California State College at Hayward

Assistant Professor of Mathematics, 1968-72
The University of New Mexico

Associate Professor of Mathematics, 1972-78
The University of New Mexico

Professor of Mathematics, 1978-2001
The University of New Mexico

Professor Emeritus, July 1, 2001-present
The University of New Mexico

VISITING APPOINTMENTS:

Research Scientist, 1967
Batelle Memorial Institute, Seattle, Washington

Visiting Professor, 1975-76
Centre de Physique Theorique
C.N.R.S., Marseille, France

Visiting Professor, Summer 1985, 1986, 1989, and 1992
Central Research Institute for Physics
Budapest, Hungary

Visiting Professor, 1992
School of Mathematics
University of New South Wales
Sydney, Australia

HONORS:

Honor Societies:
  National Honor Society
  Tau Beta Pi, National Engineering Honorary
  Sigma Tau, National Engineering Honorary
  Beta Gamma Sigma, National Business Honorary
  Delta Sigma Phi, National Business Honorary
  Phi Eta Sigma, National Freshman Honorary
  Kappa Mu Epsilon, National Mathematics Honorary

University of Colorado Tuition and Fees Scholarship, 1957-62.

NSF Cooperative Graduate Fellowship, 1963-66.

Excellent Instructor Rating by Students: Spring Semester 1984, Fall Semester 1985, Spring Semester 1986, Spring Semester 1987.

Department of Mathematics and Statistics nominee for the University of New Mexico's 1986 Outstanding Graduate Teacher of the Year Award.

Award received from the NASA Training Project for Outstanding Instruction in Mathematics, 1991.

Award received from the NASA Training Project for Outstanding Instruction in Mathematics, 1992-93.

University of New Mexico 25 Year Service Award, 1994.

Selected by UNM Chapter of Kappa Mu Epsilon to be their Faculty Advisor, 1995.

Invited keynote speaker at the Fifth International Conference on Integral Methods in Science and Engineering at Michigan Technological University in August 1998.

Received recognition by the University of New Mexico as an Outstanding Achiever of Research and Sponsored Projects in September 1998.

Honored by being ranked second out of 1,300 instructors in the UNM Student's Choice Survey of *The Best Teacher at UNM*, which appeared in the New Mexico Daily Lobo on November 19, 1998.

University of New Mexico 30 Year Service Award, 1999.

CURRENT FIELDS OF SPECIALIZATION:

Nonrelativistic Multichannel Quantum Scattering Theory.
Methods of Numerical Computation.
Singular Integral Equations Theory.
Linear Operator Theory.
Numerical Analysis.

COMPUTING EXPERIENCE:

Machines: Extensive experience on SUN, IBM, and DEC workstations and on IBM PCs. Some experience on IBM and CRAY high performance computers.

Operating Systems: Extensive experience with UNIX and OS2 Warp and WINDOWS.

Programming Languages: Extensive experience on large and small scale projects with FORTRAN. Some experience with C, C^{++}, and Bourne and C-shell scripts.

Subroutine Packages: Extensive experience with LAPACK, MATLAB, and SLATEC. Some experience with FITPACK and MINPACK.

Graphics Packages: Extensive experience with DISSPLA, CODEBOOK. Some experience with SunCore and SunCGI and GNUPLOT.

Text Processing: Extensive experience with TeX, LaTeX, HTML, Ghostscript, and Word.

Symbolic Manipulation: Extensive experience with MAPLE, MACSYMA, and MATHEMATICA. Some experience with REDUCE and SMP.

PUBLICATIONS:

1. Drag Reduction with a Gas Film on a Cylinder Rotating in a Liquid, (with F.Kreith and F. Gude) in *Multi-Phase Flow Symposium*, edited by N.J. Lipstein (ASME, New York, 1963) pp. 79-83.

2. Triples of Operator-Valued Functions Related to the Unit Circle, Pacific J. Math. 28 (1969), 503-531.

3. On the Asymptotic Condition of Scattering Theory (with J. Jauch and B. Misra) Helv. Phys. Acta 41 (1968), 513-527.

4. A Discrete Hille-Yosida-Phillips Theorem, J. Math. Anal. Appl. 39 (1972), 761-770.

5. On a Recent Paper of Amrein, Georgescu and Jauch, (with C. Chandler) Helv. Phys. Acta 45 (1972), 734-737.

6. Transition from Time-Dependent to Time-Independent Multichannel Quantum Scattering Theory, (with C. Chandler) J. Math. Phys. 14 (1973), 1328-1335.

7. On the Invariance Principle of Scattering Theory, (with J. Donaldson and R. Hersh) J. Funct. Anal. 14 (1973), 131-145.

8. Time-Dependent Multichannel Coulomb Scattering Theory, (with C. Chandler) J. Math. Phys. 15 (1974), 291-294.

9. Time-Independent Multichannel Scattering Theory for Charged Particles, (with C. Chandler) J. Math. Phys. 15 (1974), 1366-1377.

10. Invariance Principle for Modified Wave Operators, (with C. Chandler) Bull. Amer. Math. Soc. 81 (1975), 1130-1132.

11. Invariance Principle for Scattering with Long-Range (and other) Potentials, (with C. Chandler) Indiana Univ. Math. J. 25 (1976), 443-460.

12. On a Time-Independent Theory of Multichannel Quantum Mechanical Scattering, (with C. Chandler) in *Few Body Dynamics*, edited by A.M. Mitra, et al. (North Holland, Amsterdam, 1976) pp. 123-125.

13. N-Body Quantum Scattering Theory in Two Hilbert Spaces. I. The Basic Equations, (with C. Chandler) J. Math. Phys. 18 (1977), 2336-2346.

14. N-Body Quantum Scattering Theory in Two Hilbert Spaces. II. Some Asymptotic Limits, (with C. Chandler) J. Math. Phys. 19 (1978), 1610-1616.

15. Two Hilbert Space Scattering Theory: Recent Progress, (with C. Chandler) in *Few Body Systems and Nuclear Forces I*, edited by H. Zingl et al. (Springer-Verlag, New York, 1978) pp. 356-359.

16. Some N-Body Transition Operator Equations Containing Channel Projection Operators, (with C. Chandler) in *Atomic Scattering Theory*, edited by J. Nuttall (University of Western Ontario Press, London, Canada, 1978) pp. 189-193.

17. Long-Range Invariance Principle Revisited, (with C. Chandler) Indiana Univ. Math. J. 28 (1979), 389-403.

18. A Two-Hilbert-Space Formulation of Multichannel Scattering Theory, (with C. Chandler) in *Mathematical Methods and Applications of Scattering Theory*, edited by J.A. DeSanto, et al. (Springer-Verlag, Berlin, 1980) pp. 134-148.

19. A New Method of Approximation in Nuclear Reaction Theory, (with C. Chandler) in *Proceedings of the Ninth International Conference on the Few Body Problem*, edited by M. Moravscik and F.S. Levin, (University of Oregon Press, Eugene, 1980) pp. 7-8.

20. Connected Chandler-Gibson Equations and Few Body Collisions, (with W. N. Polyzou and C. Chandler) Phys. Rev. C 26 (1982), 1878-1892.

21. Multiparticle Scattering Theory and the Method of Coupled Reaction Channels, (with Gy. Bencze and C. Chandler) Nucl. Phys. A390 (1982), 461-485.

22. N-Body Quantum Scattering Theory in Two Hilbert Spaces. III. Theory of Approximations, (with C. Chandler) J. Funct. Anal. 52 (1983), 80-105.

23. N-Body Quantum Scattering Theory in Two Hilbert Spaces. IV. Approximate Equations, (with C. Chandler) J. Math. Phys. 25 (1984), 1841-1856.

24. On the Numerical Evaluation of the Input Integrals in the CG-Equations for a Six Boson Problem, (with C. Chandler) in *Few Body Problems in Physics. Vol. II*, edited by B. Zeitnitz (North Holland, Amsterdam, 1984) pp. 369-372.

25. On the Numerical Solution of the CG-Equations for a Six Boson Problem, (with B. Bertram and C. Chandler) in *Proceedings of the X. European Symposium on the Dynamics of Few-Body Systems*, edited by P. Doleschall (KFKI, Budapest, 1985) pp. 47-49.

26. Comparison of Solution Methods for Integral Equations with Cauchy Singularities, (with B. Bertram) in *Integral Methods in Science and Engineering*, edited by F. R. Payne et al. (Hemisphere, Washington, D.C., 1986) pp. 99-105.

27. On Low Energy Scattering Theory with Coulomb Potentials, in *Proceedings of the X. European Symposium on the Dynamics of Few-Body Systems; Invited Talks*, edited by Gy. Bencze (KFKI, Budapest, 1986) pp. 355-365.

28. Real Energy Limit of the CG Equations, (with C. Chandler) in *Few Body Systems in Particle and Nuclear Physics*, edited by T. Sasakawa, et al. (Tohoku University, Tokyo, 1986) pp. 270-271.

29. Low Energy Scattering Theory for Coulomb plus Long-Range Potentials, (with Gy. Bencze, C. Chandler, J. L. Friar, and G. L. Payne) Phys. Rev. C 35 (1987), 1188-1200.

30. N-Body Quantum Scattering Theory in Two Hilbert Spaces. V. Computation Strategy, (with C. Chandler) J. Math. Phys. 30 (1989), 1533-1544.

31. On the Three-Body Problem with Coulomb Interactions, (with Gy. Bencze, C. Chandler, P. Doleschall, B. J. Fisk, D. Walliser, and A. J. Waters) in *Few Body XII*, edited by B. K. Jennings, (TRIUMF, Vancouver, B.C., 1989) p. D30.

32. B-Spline Comparison of Three Forms of the CG-Equations, (with G. H. Berthold, C. Chandler, and H. J. Taijeron) in *Few Body XII*, edited by B. K. Jennings, (TRIUMF, Vancouver, B.C., 1989) p. F18.

33. On-Shell Limits and Trace Class Conditions in N-Body Theories, (with C. Chandler) in *Few Body XII*, edited by B. K. Jennings, (TRIUMF, Vancouver, B.C., 1989) p. F21.

34. Three-Body Problem with Charged Particles, (with Gy. Bencze, P. Doleschall, C. Chandler, and D. Walliser) Phys. Rev. C 43 (1991), 992-1000.

35. A New $\mathcal{K}$-Matrix Approach to N-Body Scattering, (with A. J. Waters, G. H. Berthold, and C. Chandler), J. Math. Phys. 32 (1991), 3117-3124.

36. Solution of the Chandler-Gibson Equations for a Three-Body Test Problem, (with A. J. Waters, G. H. Berthold, and C. Chandler), Phys. Rev. C 44 (1991), 1796-1811.

37. Status of the Two-Hilbert-Space Approach to N-Body Scattering, (with C. Chandler), in *Few Body XIII*, edited by I. R. Afnan and R. T. Cahill, (IAS, Adelaide, 1992), pp. 294-295.

38. Three-Body Scattering with Coulomb Interactions, (with C. Chandler, S. M. Gordon, A. J. Waters, Gy. Bencze, and P. Doleschall), in *Few Body XIII*, edited by I. R. Afnan and R. T. Cahill, (IAS, Adelaide, 1992), pp. 234-235.

39. N-Body Quantum Scattering Theory in Two Hilbert Spaces. VI. Compactness Conditions, (with C. Chandler), J. Math. Phys. 33 (1992), 3477-3492.

40. Erratum: N-Body Quantum Scattering Theory in Two Hilbert Spaces. V. Computation Strategy, (with C. Chandler), J. Math. Phys. 34 (1993), 886.

41. On Breakup States for Three Identical Particles, (with C. Chandler and A. J. Waters), in *Few Body XIV*, edited by Franz Gross, (William and Mary, Williamsburg, Virginia, 1994), pp. 773-776.

42. Solution of a Benchmark Problem with the Chandler-Gibson Equations, (with A. J. Waters and C. Chandler), in *Few Body XIV*, edited by Franz Gross, (William and Mary, Williamsburg, Virginia, 1994), pp. 844-847.

43. N-Body Quantum Scattering Theory in Two Hilbert Spaces. VII. Real Energy Limits, (with C. Chandler), J. Math. Phys. 35 (1994), 1487-1512.

44. Spline Interpolation and Smoothing on Hyperspheres, (with H. J. Taijeron and C. Chandler), SIAM J. Sci Comput. 15 (1994), 1111-1125.

45. Reaction Mechanisms in a Multichannel Scattering Theory for Identical Particles, (with Gy. Bencze, C. Chandler, and G. W. Pletsch), Few-Body Systems 18 (1995), 213-227.

46. Half-On-Shell Compact Kernel N-Body Equations, (with C. Chandler), in *Few Body XV*, edited by L. P. Kok et al., (Groningen, The Netherlands, 1997), pp. 112-113.

47. On Electron Induced Ionization of Hydrogen, (with C. Chandler), in *Few Body XV*, edited by L. P. Kok et al., (Groningen, The Netherlands, 1997), pp. 395-396.

48. On the Theory of $NN\pi$ Systems, (with C. Chandler), in *Few Body XV*, edited by L. P. Kok et al., (Groningen, The Netherlands, 1997), pp. 417-418.

49. N-Body Quantum Scattering Theory in Two Hilbert Spaces: N-Body Integral Equations, (with C. Chandler), Few-Body Systems 23 (1998), pp. 223-258.

50. On Electron Induced Ionization of Hydrogen, (with C. Chandler), Nucl. Phys. A 631 (1998), pp. 723c-726c.

51. Uniform Approximation of Functions with Discrete Approximation Functionals, (with C. Chandler), J. Approx. Th. 100 (1999), pp. 233-250.

52. General N-Body Theory of Nonrelativistic Quantum Scattering, (with C. Chandler), Few-Body Systems 27 (1999), pp. 207-249.

53. Mathematical Modeling of N-Body Quantum Scattering Processes, in *Integral Methods in Science and Engineering*, edited by B. Bertram, C. Constanda, and A. Struthers, (Chapman and Hall/CRC, Boca Raton, Florida, 2000), pp. 3-13.

54. Relativistic Multichannel Scattering Theory with Particle Creation, (with C. Chandler), Few-Body Systems Suppl. 12 (2000), pp. 245-248.

55. Basis for Breakup States of Three Identical Particles, (with C. Chandler), Few-Body Systems 31 (2001), pp. 25-50.

MAJOR CONFERENCE PARTICIPATIONS AND PRESENTATIONS:

1967. American Mathematical Society, 646th meeting, San Jose, California: "Triples of Operator-Valued Functions Related to the Unit Circle," paper presentation, abstract appears in Notices Amer. Math. Soc. 14 (1967), 397.

1968. Pacific Northwestern Section of the Society for Industrial and Applied Mathematics, Portland, Oregon: "On the Asymptotic Condition of Scattering Theory," invited presentation.

1969. NSF-RMMC Advanced Science Seminar on The Mathematical Theory of Scattering, Flagstaff, Arizona: Participant.

ONR Senior Navy Mathematicians Workshop and Bifurcation Symposium, Fort Collins, Colorado: Participant.

1971. American Mathematical Society, 77th Annual Meeting, Atlantic City, New Jersey: "A Discrete Hille-Yosida-Phillips Theorem," paper presentation, abstract appears in Notices Amer. Math. Soc. 18 (1971), 192.

1973. American Physical Society, New York, New York: "Multichannel Coulomb Scattering," (with C. Chandler), paper presentation, abstract appears in Bull. Am. Phys. Soc. 18 (1973), 142. NATO Advanced Study Institute on Scattering Theory in Mathematics and Physics, Denver, Colorado: participant.

1974. American Mathematical Society, 18th Annual Meeting, San Francisco, California: "Generalized Resolvent Equations for Multichannel Scattering with Coulomb-Like Potentials," (with C. Chandler), paper presentation, abstract appears in Notices Amer. Math. Soc. 21 (1974), A-2551.

American Physical Society, Chicago, Illinois: "Some Rigorous Results in Multichannel Coulomb Scattering Theory," (with C. Chandler), paper presentation, abstract appears in Bull. Am. Phys. Soc. 19 (1974), 88.

1975. International Conference on Few Body Systems and Nuclear Forces, Delhi, India: "On a Time-Independent Theory of Multichannel Quantum Scattering," (with C. Chandler), paper presentation, published in (12).

1976. CNRS Lecture Series on Mathematical Physics, Marseille, France: "N-Body Scattering Theory in Two Hilbert Spaces," series of invited lectures.

1977. Gordon Research Conference on Few Body Problems, Meriden, New Hampshire: Participant.

1978. International Conference on Few Body Systems and Nuclear Forces, Graz, Austria: "Two Hilbert Space Scattering Theory: Recent Progress," (with C. Chandler), paper presentation, published in (15).

Conference on the Mathematical and Computational Aspects of Atomic Scattering Theory, London, Canada: "Some N-Body Transition Operator Equations Containing Channel Projection Operators," (with C. Chandler), paper presentation, published in (16).

1979. Conference on Mathematical Methods and Applications of Scattering Theory, Washington, D.C.: "A Two-Hilbert-Space Formulation of Multichannel Scattering Theory," (with C. Chandler) invited contribution, published in (18).

Gordon Research Conference on Few Body Problems, Wolfeboro, New Hampshire: Invited participant.

Brown University Workshop on Few Body Problems, Providence, Rhode Island: Invited participant.

1980. IXth International Conference on Few Body Problems in Physics, Eugene, Oregon: "A New Method of Approximation in Nuclear Reaction Theory," (with C. Chandler) refereed paper contribution, published in (19); "Approximation Solvability and A-Proper Operators," invited presentation.

1983. Xth International Conference on Few Body Problems in Physics, Karlsruhe, Germany: "On the Numerical Evaluation of the Input Integrals in the CG-Equations for a Six Boson Problem," (with C. Chandler) refereed paper contribution, published in (24); "Recent Results on the Numerical Solution of the CG-Equations," (with C. Chandler and T. G. Trucano), poster contribution; "Recent Progress in Two Hilbert Space Scattering Theory," (with C. Chandler), poster contribution.

University of Geneva Visiting Scientist Program, Geneva, Switzerland: "On the Chandler-Gibson Approach to the N-Body Quantum Scattering Problem," invited presentation.

1984. Gordon Research Conference on Few Body Problems in Chemistry and Physics, Wolfeboro, New Hampshire: Invited participant.

Brown University Workshop on Few-Body Physics and Many-Particle Scattering Theory, Providence, Rhode Island: "Progress Toward the Solution of the CG-Equations," (with C. Chandler) invited presentation.

1985. Xth European Symposium on the Dynamics of Few-Body Systems, Balatonfured, Hungary: "On the Numerical Solution of the CG-Equations for a Six Boson Problem (with B. Bertram and C. Chandler) invited contribution, published in (25); "On Low Energy Scattering Theory with Coulomb Potentials," invited talk published in (27).

International Workshop on N-Particle Scattering Theory, KFKI (Central Research Institute for Physics) Budapest, Hungary: Invited participant.

1986. VIIIth International Congress on Mathematical Physics, Marseille, France: "Scattering Length in the Presence of Coulomb plus Polarization Potentials," (with Gy. Bencze and C. Chandler) invited contribution.

XIth International Conference on Few Body Problems in Physics, Tokyo and Sendai, Japan: "Real Energy Limit of the CG Equations," (with C. Chandler) refereed paper contribution, published in (28).

1987. Mathematical Association of America Southwestern Section Annual Meeting, Albuquerque, New Mexico: Participant.

Gordon Research Conference on Dynamics of Simple Systems in Chemistry and Physics, Wolfeboro, New Hampshire: Invited participant; "Some Algebraic Problems in Multiparticle Scattering Theory," (with Gy. Bencze, C. Chandler, and G. W. Pletsch) poster contribution; "A Strategy for Solving N-Body Equations," (with C. Chandler) poster contribution.

1988. MacAlister H. Hull Symposium, Albuquerque, New Mexico: "On Partial Wave Expansions of Scattering Amplitudes," (with C. Chandler) poster contribution.

Organized and directed (with C. Chandler) a "Year of N-Body Quantum Scattering Theory" at UNM during the 1988-89 academic year, which had eleven postdoctoral participants and nine Ph.D. student participants.

1989. American Mathematical Society, 95th Annual Meeting, Phoenix, Arizona: Participant.

American Physical Society, Spring Meeting, Baltimore, Maryland: "Inclusion of the Breakup Channel in the Chandler-Gibson Equations," (with C. Chandler and H. Taijeron) paper presentation.

XIIth International Conference on Few Body Problems in Physics, Vancouver, B. C. Canada: "On the Three-Body Problem with Coulomb Interactions," (with Gy. Bencze, C. Chandler, P. Doleschall, B. J. Fisk, D. Walliser, and A. J. Waters) refereed paper contribution, published in (31). "B-Spline Comparison of Three Forms of the CG-Equations," (with G. H. Berthold, C. Chandler, and H. J. Taijeron) refereed paper contribution, published in (32). "On-Shell Limits and Trace Class Conditions in N-Body Theories," (with C. Chandler) refereed paper contributon, published in (33).

1990. American Mathematical Society and Society for Industrial and Applied Mathematics Joint Meeting, Albuquerque, New Mexico: Participant.

Gordon Research Conference on Dynamics of Simple Systems in Chemistry and Physics, Proctor Academy, Andover, New Hampshire: Invited participant; "Splines on Hyperspheres," (with H. J. Taijeron and C. Chandler) poster contribution; "Solution of the CG Equations for a 3-Body Test Problem," (with A. J. Waters, G. H. Berthold, and C. Chandler) poster contribution.

1992. XIIIth International Conference on Few Body Problems in Physics, Adelaide, Australia: "Status of the Two-Hilbert-Space Approach to N-Body Scattering," (with C. Chandler) refereed paper contribution, published in (37). "Three-Body Scattering with Coulomb Interactions," (with C. Chandler, S. M. Gordon, A. J. Waters, Gy. Bencze, and P. Doleschall) refereed paper contribution, published in (38). "Recent Progress on a Rigorous and Practical Approach to N-Body Scattering," invited talk.

1994. XIVth International Conference on Few Body Problems in Physics, Williamsburg, Virginia: "On Breakup States for Three Identical Particles," (with C. Chandler and A. J. Waters), refereed paper contribution, published in (41). "Solution of a Benchmark Problem with the Chandler-Gibson Equations," (with A. J. Waters and C. Chandler), refereed paper contribution, published in (42).

1996. Spring meeting of the American Physical Society, Washington, DC: "On the Theory of Electron Induced Ionization of Hydrogen," (with C. Chandler) poster presentation, abstract published in Bull. Am. Phys. Soc. 42 (1996), 962.

Gordon Research Conference on Dynamics of Simple Systems in Chemistry and Physics, Proctor Academy, Andover, New Hampshire: "Half-On-Shell N-Body Equations with a Compact Kernel and a Unique Solution," (with C. Chandler) poster presentation.

1997. XVth International Conference on Few-Body Problems in Physics, Groningen, The Netherlands: "Half-On-Shell Compact Kernel N-Body Equations," (with C. Chandler), refereed paper contribution, published in (46). "On Electron Induced Ionization of Hydrogen," (with C. Chandler), refereed paper contribution, published in (47). "On the Theory of $NN\pi$ Systems," (with C. Chandler), refereed paper contribution, published in (48). "On the Theory of Electron Induced Ionization of Hydrogen," (with C. Chandler), invited oral presentation, to be published in (50).

1998. Fifth International Conference on Integral Methods in Science and Engineering at Michigan Technological University in August 1998: "Mathematical Modeling of N-Body Quantum Scattering Precesses," invited keynote address, to be published in (52).

1999. Gordon Research Conference on Dynamics of Simple Systems in Chemistry and Physics, Salve Regina University, Newport, Rhode Island, "A Basis for Breakup States of Three Identical Particles," (with C. Chandler) poster presentation.

RESEARCH GRANTS FUNDED:

Years	Agency	PI/I	Amount	Purpose of Grant
1970-72	NSF	I	$5,202	Scattering theory research
1972-74	SURP	PI	$52,734	Scattering theory research
1975-76	DGRST	PI	FF36,576	Scattering theory research
1981-83	NSF	PI	$59,000	Scattering theory research
1983	UNM-RAC	PI	$1,685	Purchase computer equipment
1983-86	NSF	PI	$138,267	Scattering theory research
1984-87	NSF	PI	$31,500	U.S.-Hungarian cooperation
1985	DoD-URIP	I	$165,590	Purchase computer equipment
1986-88	NSF	PI	$100,000	Scattering theory research
1989	NSF	I	$0	Supercomputer (Cray) time
1988-91	NSF	PI	$227,600	Scattering theory research
1988-92	NSF	PI	$45,000	U.S.-Hungarian cooperation
1991-92	NSF	PI	$46,000	Scattering theory research
1992-96	NSF	PI	$192,810	Scattering theory research
1993-96	NSF	PI	$11,860	Supplement to above grant
1993-97	NSF	PI	$31,563	U.S.-Hungarian cooperation
1995-97	NSF	PI	$110,000	Scattering theory research

PH.D. STUDENTS DIRECTED:

1. Timothy G. Trucano, August, 1980, dissertation titled *Asymptotic Completeness in an Approximate Model of Quantum Mechanical Scattering Theory*, presently at Sandia National Laboratory, Albuquerque, NM.

2. Augustin A. Dubrulle, August, 1986, dissertation titled *On Matrix Bidiagonalization and its Application to the Compression of Large Digital Images* (mainly supervised by Cleve Moler), presently at International Business Machines, Palo Alto, CA.

3. Barbara S. Bertram, May, 1987, dissertation titled *Analysis and Solution of Integral Equations with Fixed Cauchy Singularities*, presently an Associate Professor at Michigan Technical University, Houghton, MI.

4. G. William Pletsch, December, 1988, dissertation titled *The Combinatorics of Physical Rearrangement Reactions*, presently an Assistant Professor at Albuquerque Technical Vocational Institute, Albuquerque, NM.

5. Henry J. Taijeron, December, 1989, dissertation titled *Splines on Hyperspheres*, presently a Professor and Chairman at the University of Guam, Guam, USA.

6. Arlon J. Waters, July, 1994, dissertation titled *Breakup Theory and Computation for Three-Body Scattering with the Chandler-Gibson Equations*, Mr. Waters was one of only six UNM graduate students out of a pool of over 3,900 to win a Graduate Achievement Award for the academic year 1993-94. He is presently employed at Sandia National Labs in Albuquerque, NM.

COURSES TAUGHT:

Calculus I - III	Advanced Engineering Mathematics I and II
Vector Analysis	Applied Ordinary Differential Equations
Advanced Calculus I and II	Introduction to Numerical Computing
Introduction to Topology	Linear Algebra with Applications
Linear Spaces	Ordinary Differential Equations
Applied Matrix Theory	Partial Differential Equations for Engineering
Linear Analysis	Methods of Theoretical Physics
Scattering Theory	Selected Topics in Applied Mathematics
Functional Analysis I and II	Distribution Theory and Green's Functions
Numerical Analysis I and II	Selected Topics in Functional Analysis
Methods of Applied Mathematics I and II	Mathematical Methods in Science & Engineering

INSTRUCTIONAL TELEVISION COURSES TAUGHT:

Math 504. Numerical Analysis I	Fall 1986
Math 505. Numerical Analysis II	Spring 1987
Math 583. Linear Analysis I	Fall 1987
Math 584. Linear Analysis II	Spring 1988
Math 583. Methods of Applied Mathematics I	Fall 1990
Math 584. Methods of Applied Mathematics II	Spring 1991
Math 464. Applied Matrix Theory	Fall 1993
Math 466. Mathematical Methods in Science and Engineering	Spring 1995

LARGE LECTURE SECTIONS TAUGHT:

Math 163. Calculus II, Fall 1989, Spring 1990, and Fall 1991 (almost 100 students each)

Math 162, Calculus I, Spring 1993, 86 students.

Math 316. Applied Ordinary Differential Equations, Spring 1991, 54 students.

Math 316. Applied Ordinary Differential Equations, Fall 1992, 45 students.

Math 316. Applied Ordinary Differential Equations, Fall 1993, 49 students.

Math 316. Applied Ordinary Differential Equations, Spring 1994, 50 students.

Math 180. Elements of Calculus I, Fall 1994, 49 students.

Math 316. Applied Ordinary Differential Equations, Spring 1995, 43 students.

Math 316. Applied Ordinary Differential Equations, Spring 1996, 45 students.

Math 162. Calculus I, Fall 1996, 44 students.

Math 316. Applied Ordinary Differential Equations, Spring 1997, 41 students.

Math 316. Applied Ordinary Differential Equations, Spring 1998, 44 students.

UNIVERSITY, COLLEGE, AND DEPARTMENT COMMITTEES 1985-2000.

Faculty Advisor of UNM Chapter of Kappa Mu Epsilon, the national mathematics honor society.

Assistant Chairman, UNM Faculty Senate Budget Committee.

Member, UNM Computer Use Committee

Member, UNM Faculty Senate Long-Range Planning Committee.

Member, UNM European Studies Executive Council.

Chairman, College of A&S Senior Faculty Promotion and Tenure Committee.

Member, College of A&S Review Committee for the Regent's Professorship Awards.

Member, College of A&S Committee on Governance and Academic Planning.

Chairman, Mathematics Department Chair Search Committee.

Chairman, Mathematics Department Promotion and Tenure Committee.

Chairman, Mathematics Department Computer Use Committee.

Chairman, Mathematics Department Rules Committee.

Chairman, Mathematics Department Travel Committee.

Member, Mathematics Department Executive Committee.

Member, Mathematics Department Graduate Studies Committee

Member, Mathematics Department Master's Exam Committee.

Mathematics Department French Examiner.

Chairman, Mathematics Department Computer Use Committee.

Member, Two Search Committees for Systems Programmers.

Mathematics Department Course Coordinator for several courses.