

Annual Report-1982

I. GENERAL DEVELOPMENTS

A. PERSONNEL CHANGES AND DEVELOPMENTS

A new assistant professor in the Department of Mathematical Sciences in fall semester 1982 was David J. Pengelley, Ph.D. 1980, University of Washington. Professor Pengelley's area of research is algebraic topology.

New teaching specialists in the department fall semester were W. Earl Clark, Sue L. Korsak, Scott D. Mann, and Ahmad Sadeghi.

Ray Mines and Irvin E. Vance were promoted to professor, effective fall semester 1982. Roger H. Hunter and Clayton C. Sherman were granted tenure, effective fall semester.

John D. DePree and Richard J. Bagby were on sabbatical leave during spring semester. John DePree was doing research in analysis at the University of Washington, and Richard Bagby was teaching and doing research in harmonic analysis at the University of South Carolina. Keith Phillips was on exchange with Rebekka Struik during spring semester and on sabbatical leave during fall semester, continuing his research in Fourier analysis at the University of Colorado at Boulder.

Clayton C. Sherman and Francis D. Williams were on leave without pay during the spring semester. Clayton Sherman was teaching and doing research in algebraic K-theory at Texas Tech University, and Francis Williams was teaching and doing research in algebraic topology at the University of Missouri at St. Louis.

Visiting and consulting faculty during the spring semester were Piotr Antosik, on leave from the Mathematical Institute of the Polish Academy of Sciences, Katowice Branch; Carl Faith, on leave from Rutgers University; Rudiger Gobel, on leave from University of Essen, West Germany; Robert O. Stanton, on sabbatical leave from St. Johns University; Rebekka Struik from University of Colorado at Boulder, on exchange with Keith Phillips; Charles Vinsonhaler, on sabbatical leave from University of Connecticut; Carlton Evans, Theodore Faticoni, Anthony Giovannitti, and Clem Ota. Visiting the department during the fall semester were Carlton Evans and Wim Ruitenburg.

Ten graduate and undergraduate students were initiated into the mathematics honorary society, Pi Mu Epsilon, at a ceremony held May 1. During the spring semester, the department employed 28 Crimson Scholars, majoring in mathematics or an area which utilizes mathematics, as classroom assistants. In the fall semester, the department employed 22 Crimson Scholars.

In 1982, 11 students received the Bachelor of Science in mathematics, 1 student received the Bachelor of Science in Arts and Sciences with a minor in mathematics, 6 students received the Master of Science in mathematics.

B. NEW OR REVISED PROGRAMS

The science and engineering bond issue funds for scientific equipment for 1982 were used primarily for the purchase of a number of IBM Personal Computers for both faculty and students, along with printers, plotters, and other peripheral equipment. Bond issue matching funds were awarded to the department in support of a contract, which allowed the department to upgrade the PERQ computer and purchase a Canon laser printer for use with the PERQ.

The high level of computer activity in the department and the university have led to some new roles for some members of the department faculty. Associate Professor Roger Hunter coordinated the purchase of computer equipment for Mathematical Sciences as well as IBM Personal Computers for the Departments of Psychology, Sociology and Anthropology and Computer Science, and the College of Business Administration and Economics. In addition, he consulted within the university on microcomputer uses and applications with the Computer Center, the Departments of Computer Science, Psychology, Sociology and Anthropology, Speech, Agricultural Economics and Astronomy, the Agricultural Experiment Station, and the College of Business Administration and Economics.

Assistant Professor Douglas Kurtz assumed the role of adviser to department faculty, graduate students, and staff on some aspects of computer usage--introducing people to the various programs available, showing them how to use the department's word processing systems, creating symbols for the text editor on request, and setting up grading files and instructing people on their use. Associate Professors Roger Hunter and Barry MacKichan and Professor Fred Richman had the major responsibility for developing and maintaining software for the department. Associate Professors Roger Hunter and Barry MacKichan of Mathematical Sciences and Professor J. Mack Adams of Computer Science have been developing a very sophisticated text editing program.

Professor Fred Richman made major improvements in the department's scheduling program. He wrote programs to facilitate students running Fortran on the IBM personal computer in an introductory numerical analysis course, and implemented some standard algorithms for use by students or instructors of this course in the future. He developed a matrix manipulation unit

for the IBM personal computer for use by students or instructors in linear algebra courses. Professor Richman also wrote a permutations group unit that multiplies permutations, finds subgroups generated by given permutations, compares subgroups, etc., for use in modern algebra courses.

Associate Professors Roger Hunter, Barry MacKichan and Warren Krueger were heavily involved in development of computer assisted instruction for a course in trigonometry, supported by a grant from the National Science Foundation, CAUSE (Comprehensive Assistance to Undergraduate Science Education).

After a complete review of the undergraduate and graduate programs in statistics, the graduate statistics courses were extensively revised and a regular schedule worked up for offering them.

What may sometimes be overlooked is the extremely large number of "professional services" performed by members of the department. It ranges from formal to informal consulting (frequently without reimbursement for more than actual expenses), through such things as working with school systems, to the onerous duties of reviewer and referee for various journals and government organizations. A careful reading of "professional activities" in Volume II provides at most an approximation of the magnitude of these services.

II. RESEARCH

A. PROPOSALS

Thirteen research proposals were submitted to federal agencies by 20 faculty members, 6 new and continuing proposals (13 faculty members) were funded in 1982 for a total of \$198,741. Twelve new and continuing proposals (18 faculty members), \$1,307,666, were pending at the end of 1982.

B. PUBLICATIONS

In 1982, 14 members of the faculty had 33 research papers published in professional journals or conference proceedings. In addition, 22 faculty members attended one or more professional meetings and presented 28 research papers. Fourteen faculty members presented 23 colloquia at universities.

C. COLLOQUIA AND SEMINARS

During 1982 the department held 27 colloquia, with 11 presented by local faculty and students and 16 by invited speakers. Active seminars included algebra, algebraic foundations of abstract data types, abelian group theory, category theory, theoretical computer science, constructive algebra, constructive analysis, constructive mathematics, computational geometry, harmonic analysis, ring theory, topology, torsion free abelian group theory, statistics.

III. CRITICAL ANALYSIS AND RECOMMENDATIONS

Increased resources were made available to Mathematical Sciences in 1982 for the instructional program of individually-paced arithmetic and algebra courses. As a result additional faculty instructors and classroom assistants were added to the program, reducing the student/tutor ratio from approximately 18:1 to 12:1. Saturday hours were added for the Learning Center and Testing Center, and weekday hours were extended. Limited opportunities were created for students to obtain test tickets outside of their scheduled classroom hours. Faculty supervisors had time available to work with students having special problems. These changes improved the program immensely.

IV. GOALS AND OBJECTIVES

- A. GOAL: Strive to maintain continued excellence in research and professional activities. (Continuing)
1. Objective: Provide faculty members who are actively involved in mathematical research with the time, encouragement, and support services required for their research. (Accomplished; Continuing)
 2. Objective: Sponsor an active program of colloquia to provide indepth contact with experts in various research areas. (Accomplished; Continuing)
 3. Objective: Encourage and support research seminars, including interdepartmental seminars, to explore areas of applications of mathematics. (Accomplished; Continuing)
 4. Objective: Support the need for computer equipment to be used by members of the faculty in mathematical research, including maintaining departmental equipment and seeking funds for additional acquisitions as needed. (Continuing)
 5. Objective: Request new faculty positions so that active research faculty can once again be given appropriate time for research activities without slighting the teaching responsibilities of the department. (Continuing)
- B. GOAL: Work to develop and strengthen the graduate program in mathematics. (Continuing)
1. Objective: The graduate committee of the department plans continued extensive regional, national, and international advertising in 1982 to attract qualified applicants to the graduate program in mathematics. (Accomplished; Continuing)
 2. Objective: Maintain communication with mathematicians at White Sands, and continue to offer sequences of courses at appropriate times to attract these potential students. (Continuing)
 3. Objective: Develop master's programs in pure mathematics, numerical analysis, operations research, applied statistics, mathematical statistics, and mathematics education. The graduate committee will explore the possibility of a master's program with an emphasis in mathematical computer science. (Continuing)

4. Objective: The faculty will support the doctoral programs in mathematics and statistics, even though this will in some cases result in a teaching load above normal responsibility. (Continuing)
 5. Objective: Maintain close ties with the Department of Computer Science, supporting its new doctoral program, as well as its master's and undergraduate programs. (Accomplished; Continuing)
 6. Objective: Offer service courses in mathematics in support of graduate programs in science and engineering, and work to attract more of these students into appropriate mathematics courses. (Accomplished; Continuing)
 7. Objective: Provide graduate training in the use of state-of-the-art computer technology in mathematical applications. (Continuing)
 8. Objective: Continue the program of supervision for graduate assistants teaching lecture sections. (Accomplished; Continuing)
 9. Objective: Hire visiting faculty primarily on the basis of their potential to further the graduate and research programs, and to teach mathematics effectively. (Continuing)
 10. Objective: Request new faculty positions to help develop the graduate programs, particularly those in numerical analysis, statistics, and applied mathematics. (Continuing)
- C. GOAL: Work to strengthen the programs in mathematics and statistics for undergraduate majors and minors. (Continuing)
1. Objective: Work with the deans of arts and sciences, engineering, and education to develop ways of obtaining more complete and timely reports on mathematics majors, including second majors and students planning mathematics as a teaching field, in order to communicate more effectively with students. (Continuing)
 2. Objective: Mail information about New Mexico State University mathematics programs to students and high schools in New Mexico and El Paso. The undergraduate committee will consult with the staff in the Office of Admissions to improve the recruitment efforts of the department. (Continuing)

3. Objective: The undergraduate committee will study the mathematics curriculum with a view toward responding to the needs of mathematics majors and minors, as well as attracting additional undergraduate mathematics majors. (Continuing)
 4. Objective: Seek support for expanded computer clusters on campus to meet the needs of students majoring in mathematics. (Continuing)
- D. GOAL: Provide the best possible program of service courses. (Continuing)
1. Objective: Reevaluate the undergraduate mathematics curriculum, keeping in mind the needs of the students from all colleges. Increasing emphasis will be placed on enforcement of placement guidelines and better advisement of students who may be marginally prepared for their required courses. (Revised; Continuing)
 2. Objective: Give a mathematics placement examination to new students, a program begun in 1979, and continue to evaluate the effectiveness of this placement program. A new placement examination to meet the needs of students in the College of Education will be developed. (Accomplished; Continuing)
 3. Objective: Develop the program of advising and placement for students in lower-division courses, taking advantage of the individually-paced remedial and precalculus courses which are available for students to drop back into during a semester. (Continuing)
 4. Objective: Cooperate in the implementation of the basic skills requirement in mathematics, which is in effect for students entering summer 1980 or later. This will include administering the NMSU Basic Skills Examination in Mathematics at least two times each semester. (Continuing)
 5. Objective: Development and use of microcomputer based learning materials, the work sponsored by the interdepartmental National Science Foundation CAUSE grant awarded to members of the faculty in mathematics and computer science. (Continuing)
 6. Objective: Begin extensive use of microcomputers by students in several undergraduate courses, including courses in finite mathematics and numerical analysis. (Continuing)

7. Objective: Support the university's request for a new building for the Departments of Mathematical Sciences, Computer Science, and Psychology; which will include space and equipment for both development and implementation of computer-based instruction, computer- equipped classrooms for students of mathematics, and space and equipment for a new Mathematics Learning Center. (Continuing)

8. Objective: Request new faculty positions to better serve the mathematical needs of undergraduate students, many of whom, under present conditions, can be accommodated only in large or very large classes. (Continuing)

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I. PERSONNEL ACTIVITIES

A. PROFESSIONAL SERVICE

D. M. Arnold

Member, American Mathematical Society.
Member, Mathematical Association of America.
Member, Department of Mathematical Sciences Undergraduate Committee.
Member, Department of Mathematical Sciences Promotion to Associate Professor and Tenure Committee.
Chairman, doctoral committee: U. Albrecht.
Chairman, doctoral comprehensive examination committee, mathematics.
Member, master's examination committee, mathematics.
Course coordinator, MATH 111, fall.
Dean's representative, doctoral comprehensive examination committees: engineering, one; chemistry, one.

R. J. Bagby

Member, American Mathematical Society.
Member, Mathematical Association of America.
Member, American Association of University Professors.
Referee, Proceedings of the American Mathematical Society.
Referee, National Science Foundation research grant proposals.
Reviewer, Mathematical Reviews, ten articles.
Reviewer, Zentralblatt fur Mathematik, six articles.
Member, College of Arts and Sciences Curriculum and Educational Policies Committee, fall.
Chairman, doctoral oral comprehensive examination committee, mathematics.
Participant, research seminar, University of South Carolina.

K. K. Berver

Author, new versions of the Instructor Handbook, Tutor Manual and Course Instructions for MATH 100N, 102N, 115, and 185.

J. D. DePree

Member, Board of Governors, Pacific Journal of Mathematics.
Referee, Pacific Journal of Mathematics.
Referee, Indiana Journal of Mathematics.
Member, College of Arts and Sciences Planning Committee, fall.
Alternate member, Faculty Senate Review Board of Faculty Performance Evaluation, fall.
College of Arts and Sciences Representative, Committee to Study Transitional Retirement, fall.
Member, Department of Chemistry Promotion and Tenure Committee, fall.
Course coordinator and faculty supervisor for graduate assistants, MATH 191, fall.

C. L. Evans

Member, National Council of Teachers of Mathematics.
Member, New Mexico Council of Teachers of Mathematics.
Member, Colorado Council of Teachers of Mathematics.
Member, Greater El Paso Council of Teachers of Mathematics.
Member, School Science and Mathematics Association.
Referee, School Science and Mathematics Journal.
Workshop presenter for fourth, fifth, and sixth grade teachers,
"Geoboard fractions," Ysleta Independent School District,
El Paso, Tex.
Faculty advisor, Pi Mu Epsilon, spring.

E. D. Gaughan

Member, National Council of Teachers of Mathematics.
Member, Greater El Paso Council of Teachers of Mathematics.
Member, Mathematical Association of America.
Secretary-treasurer, Mathematical Association of America South-
western Section.
Institutional representative, Mathematical Association of
America.
Presenter, In-Service Workshop for Public School Teachers,
San Angelo, Tex.
Work group participant, Conference on Improving the Quality of
Education, Las Cruces, N. Mex.
Member, Board of Trustees, Ralph B. Crouch Scholarship Fund.
Member, Board of Trustees, Willoughby Nason Scholarship Fund.
Reader-Consultant, High School Precalculus Project, Scott,
Foresman & Co.
Member, Committee to write a preparedness brochure for high
school students.
Member, University Appeals Board.
Member, Mathematics/Engineering Committee.
Adviser, College of Arts and Sciences Advising Center.
Chairman, Department of Mathematical Sciences Undergraduate
Committee, spring and fall.
Chairman, Department of Mathematical Sciences Ad Hoc Calculus
Committee.
Departmental coordinator, fund raising campaign for United Way
of Dona Ana County.
Course coordinator and faculty supervisor for graduate
assistants: MATH 125, spring and fall; MATH 135 and 136,
fall.
Member, doctoral committee: physics.
Member, master's examination committee: electrical engineering.

J. B. Giever

Member, American Mathematical Society.
Member, Mathematical Association of America.
Member, Association for Symbolic Logic.
Member, College of Arts and Sciences Curriculum Committee,
spring.

R. H. Hunter

Member, American Mathematical Society.
Member, Association for Computing Machinery.
Member, Australian Mathematical Society.
Member, Institute of Electrical and Electronics Engineers.
Member, Mathematical Association of America.
Referee, Australian Journal of Mathematics.
Referee, National Science Foundation Computer Aided Undergraduate Science Education (CAUSE) proposals.
Referee, National Science Foundation research grant proposals.
Referee, Pacific Journal of Mathematics.
Referee, Proceedings of the American Mathematical Society.
Referee, Rocky Mountain Journal of Mathematics.
Referee, Transactions of the American Mathematical Society.
Reviewer, Mathematical Reviews.
Computer coordinator, Department of Mathematical Sciences.
Member, Computer Advisory Group.
Member, Graduate Council, fall.
Member, master's examination committees: mathematics, one; electrical and computer engineering, one; computer science, two.
Course coordinator and faculty supervisor for graduate assistants, MATH 180, spring.

D. G. Johnson

Member, American Mathematical Society.
Member, Mathematical Association of America.
Member, National Council of Teachers of Mathematics.
Member, Association for Supervision and Curriculum Development.
Participant, College of Arts and Sciences panel presentation, New Mexico State University High School Counselors/Principals Conference, Las Cruces.
Work group participant, Conference on Improving the Quality of Education, Las Cruces.
Colloquium speaker, College of Arts and Sciences Dean's Colloquium, "The Mathematics Learning Center."
Consultant on curriculum and textbook changes, New Mexico high schools.
Consultant with Las Cruces Public Schools on follow-up of graduates who attend New Mexico State University and possible development of placement testing for high school juniors, with preliminary work toward expansion of these programs to other school districts.
Developed College of Education Mathematics Placement Examination, and placement programs.
Member, Retention Committee.
Ex officio member, Department of Mathematical Sciences Advisory Committee.
Member, Department of Mathematical Sciences Undergraduate Committee.

Member, Mathematics/Engineering Committee.
Member, doctoral committee, educational management and development.
Member, master's comprehensive examination committee, education.
Course coordinator and faculty supervisor for graduate assistants, MATH 100N, 102N, 115, 185, spring and fall.

W. H. Julian

Member, Sigma Xi.
Member, American Mathematical Society.
Member, American Association for the Advancement of Science.
Reviewer, Mathematical Reviews.
Coordinator, Library and Mathematics Reading Room for the Department of Mathematical Sciences, spring.
Department photographer, maintaining permanent records of department members and colloquium speakers.
Course coordinator and faculty supervisor for graduate assistant: MATH 135, spring; MATH 192, spring and fall.
Course coordinator, MATH 392, spring.

J. E. Kist

Contributing member, American Mathematical Society.
Member, Mathematical Association of America.
Member, American Association for the Advancement of Science.
Member, Sigma Xi.
Sustaining member, Phi Beta Kappa.
Referee, Algebra Universalis.
Reviewer, Mathematical Reviews.
Reviewer, Zentralblatt fur Mathematik.
Member, Department of Mathematical Sciences Promotion to Professor Committee.
Member, Department of Mathematical Sciences Ad Hoc Calculus Committee.
Course coordinator and faculty supervisor for graduate assistants, MATH 292, spring and fall.
Member, doctoral final oral examination committee, mathematics.
Member, doctoral comprehensive examination committee, mathematics.
Member, Department of Mathematical Sciences Committee for Written Comprehensive Examinations.

R. A. Knoebel

Member, American Mathematical Society.
Member, Association for Computing Machinery.
Member, British Society for the History of Mathematics.
Member, Deutsche Mathematiker-Vereinigung.
Member, Institute of Electrical and Electronics Engineers.
Member, London Mathematical Society.
Member, Mathematical Association of America.

Member, New Mexico Academy of Science.
Member, Oesterreichische Mathematische Gesellschaft.
Member, Society for Industrial and Applied Mathematics.
Summer Faculty Fellowship, National Aeronautics and Space Administration, Jet Propulsion Laboratory, ten weeks.
Lester P. Ford Award presented by the Mathematical Association of America for expository writing, for the article "Exponentials reiterated," Amer. Math. Monthly 88 (4), (1981).
Arranged meetings at Jet Propulsion Laboratory, California Institute of Technology, University of Southern California, and Rockwell International for the interchange of ideas on automating the design of silicon computer chips.
Member, Department of Mathematical Sciences Graduate Committee.
Member, Department of Mathematical Sciences Committee for Written Comprehensive Examinations.
Member, master's examination committee, mathematics.
Chairman, master's examination committee, computer science.
Member, Department of Computer Science Committee for Written Comprehensive Examinations.
Course coordinator, MATH 230, fall.

S. L. Korsak

Member, National Council of Teachers of Mathematics.

W. M. Krueger

Member, American Mathematical Society.
Reviewer, Zentralblatt fur Mathematik.
Member, College of Arts and Sciences Improvement of Instruction and Student Relations Committee.
Member, College of Arts and Sciences Grade Appeals Committee.
Member, Department of Mathematical Sciences Undergraduate Committee.
Member, Department of Mathematical Sciences Ad Hoc Calculus Committee.
Member, Department of Mathematical Sciences Committee for Written Comprehensive Examinations.
Member, doctoral comprehensive examination committee, mathematics.
Member, master's oral examination committees: mathematics, one; computer science, one.
Course coordinator and faculty supervisor for graduate assistants, MATH 142, fall.

A. H. Kruse

Member, Board of Editors, Rocky Mountain Journal of Mathematics.
Referee, Rocky Mountain Journal of Mathematics.
Chairman, Department of Mathematical Sciences Promotion to Professor Committee, spring and fall.

Member, Department of Mathematical Sciences Ad Hoc Committee on
Revision of Guidelines for Promotion and Tenure.
Coordinator, Library and Mathematics Reading Room for the
Department of Mathematical Sciences, fall.
Member, Department of Mathematical Sciences Committee for
Written Comprehensive Examinations.

D. S. Kurtz

Member, American Mathematical Society.
Member, Mathematical Association of America.
Referee, Proceedings of the American Mathematical Society.
Referee, National Science Foundation research grant proposals.
Reviewer, Mathematical Reviews.
Member, Department of Mathematical Sciences Committee for
Written Comprehensive Examinations.
Member, Department of Mathematical Sciences Ad Hoc Committee to
Review MATH 392.
Member, master's examination committee, mathematics.
Member, doctoral comprehensive examination committee,
mathematics.
Course coordinator and faculty supervisor for graduate
assistants, MATH 136, spring.
Advisor to department faculty and staff on computer usage.

J. O. Loustaunau

Member, American Mathematical Society.
Member, New Mexico Academy of Sciences.
Member, Board of Directors, United Way of Dona Ana County.
Course coordinator and faculty supervisor for graduate
assistants, MATH 142, spring.
Course coordinator, MATH 392, fall.

B. B. MacKichan

Member, American Mathematical Society.
Referee, National Science Foundation research grant proposal.
Consultant, Library of Congress, on the development of a data
entry system which allows the use of international
alphabets and diacritic marks.
Consultant, Triad Computing, Inc.
Dean's Representative, master's examination committees:
computer science, two.
Course coordinator, MATH 230, spring.
Course coordinator and faculty supervisor for graduate
assistants, MATH 180, fall.

R. J. Y. McLeod

Member, Institute of Mathematics and its Applications.
Member, International Association for Mathematics and Computers
in Simulation.
Referee, Institute of Mathematics and its Applications.

Referee, Society for Industrial and Applied Mathematics Journal of Numerical Analysis.
Invited lecturer: series of nine lectures, University of Western Australia; one lecture, Western Australian Institute of Technology.
Consultant, Automatic Sheep Shearing Project of the Australian Wool Board.
Consultant, Geometric Modelling of Ferrets' Brains, British Medical Research.
Member, Department of Mathematical Sciences Graduate Committee.
Doctoral thesis advisor, National Institute for Mathematical Sciences, Council for Scientific and Industrial Research, Pretoria, South Africa: L. Baart.

M. Mandelkern

Member, American Mathematical Society.
Member, London Mathematical Society.
Reviewer, Mathematical Reviews.

R. Mines

Member, American Mathematical Society.
Member, Mathematical Association of America.
Member, Deutsche Mathematiker-Vereinigung.
Referee, Mathematical Reviews.
Member, Faculty Senate.
Member, Faculty Senate Committee on Committees.
Member, Faculty Senate Faculty Affairs Committee.
Member, College of Arts and Sciences Faculty Affairs Committee, spring.
Colloquium Chairman, Department of Mathematical Sciences.
Chairman, Department of Mathematical Sciences Promotion to Associate Professor and Tenure Committee.
Member, Organizational Committee for Visiting Distinguished Professor Peter Cannon.
Member, Department of Mathematical Sciences Ad Hoc Committee on Revision of Guidelines for Promotion and Tenure.
Member, Department of Mathematical Sciences Committee for Written Comprehensive Examinations.
Member, master's examination committee, mathematics.
Member, doctoral comprehensive examination committee, mathematics.

H. T. Nguyen

Member, Institute of Mathematical Statistics.
Member, American Mathematical Society.
Referee, Journal of Fuzzy Sets and Systems.
Reviewer, Mathematical Reviews.
Referee, National Science Foundation research grant proposal.
Member, International Program Committee, 1983 Symposium International, International Federation of Automatic Control.

D. J. Pengelley

Member, American Mathematical Society.
Member, Mathematical Association of America.
Member, Union of Concerned Scientists.
Reviewer, Zentralblatt fur Mathematik.

K. L. Phillips

Member, American Mathematical Society.
Member, Mathematical Association of America.
Member, Sigma Xi.
Member, Phi Beta Kappa.
Referee, Rocky Mountain Journal of Mathematics.
Referee, Institute of Electrical and Electronic Engineers
Transactions on Pattern Analysis and Machine Intelligence.
Editor and reviewer, W. H. Freeman & Co.
Consultant, U.S. Army, White Sands Missile Range.
Member, College of Arts and Sciences Planning Committee.
Chairman, doctoral committees: L. Jacobs, J. Kirby.

F. Richman

Member, American Mathematical Society.
Member, Mathematical Association of America.
Member, Society for Industrial and Applied Mathematics.
Member, London Mathematical Society.
Referee, Pacific Journal of Mathematics.
Referee, American Journal of Mathematics.
Referee, Proceedings of the American Mathematical Society.
Reviewer, Mathematical Reviews.
Reviewer, National Science Foundation research grant proposal.
Book reviewer: two books on constructive mathematics, Journal for Symbolic Logic.
Speaker, "Constructive mathematics," a series of logic seminars, Monash University, Clayton, Victoria, Australia.
Member, Department of Mathematical Sciences Advisory Committee.
Member, Graduate School James H. Davis Prize Committee.
Member, Department of Computer Science Promotion and Tenure Committee, fall.
Member, doctoral final oral examination committees: computer science, one; mathematics, one; physics, one.
Member, master's examination committee, computer science.

G. S. Rogers

Member, Institute of Mathematical Statistics.
Institutional representative, American Statistical Association.
Member, Board of Governors, Mathematical Association of America, term ended July 1982.
Referee, Linear and Multilinear Algebra.
Referee, American Statistician.
Judge, Regional Science and Engineering Fair, Las Cruces.
Referee, statistics books for John Wiley & Sons, Inc.

Chairman, Statistics Seminars.
Chairman, Department of Mathematical Sciences Ad Hoc Committee
on Revision of Guidelines for Promotion and Tenure.
Course coordinator and faculty supervisor for graduate
assistants, STAT 251, spring and fall.
Dean's Representative, doctoral final oral examination
committee, physics.
Dean's Representative, master's examination committee, biology.
Advisor, College of Arts and Sciences Advising Center.
Member, Department of Mathematical Sciences Undergraduate
Committee.

W. B. Ruitenburg

Member, Association for Symbolic Logic.
Member, Nederlands Wiskundig Genootschap.
Referee, Proceedings of the L. E. J. Brouwer Centenary
Conference.

C. C. Sherman

Member, American Mathematical Society.
Referee, National Science Foundation research grant proposals.

C. W. Swartz

Member, Mathematical Association of America.
Member, Society for Industrial and Applied Mathematics.
Member, Consortium for Mathematics and its Applications.
Institutional representative, Rocky Mountain Mathematics
Consortium.
Session chair, American Mathematical Society-Mathematical
Association of America Annual Meetings, Cincinnati, Ohio.
Reviewer, Mathematical Reviews.
Reviewer, Zentralblatt fur Mathematik.
Chairman, Department of Mathematical Sciences Graduate
Committee, fall.
Member, Department of Mathematical Sciences Advisory Committee.
Member, Department of Mathematical Sciences Committee for
Written Comprehensive Examinations.
Member, master's examination committees: mathematics, two.

J. D. Thomas

Member, Society for Industrial and Applied Mathematics.
Member, Mathematical Association of America.
Member, Association for Computing Machinery.
Member, National Council of Teachers of Mathematics.
Visiting staff member, Los Alamos Scientific Laboratory,
summer.
Consultant, Office of Army Research, White Sands Missile Range.
Member, Department of Music Promotion and Tenure Committee.
Member, Department of Mathematical Sciences Advisory committee,
fall.

Faculty sponsor, Alpha Tau Omega Fraternity.
Chairman, doctoral committees: A. Dare, J. Giever, T. Larkin.
Course coordinator and faculty supervisor for graduate assistants, MATH 192, spring.

I. E. Vance

Member, National Council of Teachers of Mathematics.
Vice President, New Mexico Council of Teachers of Mathematics.
President Elect, New Mexico Council of Teachers of Mathematics.
Member, National Council of Supervisors of Mathematics.
Member, National Association of Mathematicians.
Member, Mathematical Association of America.
Member, School Science and Mathematics Association.
Referee, School Science and Mathematics.
Referee, The Mathematics Teacher.
Conducted two-week summer workshop, Workshop for High School Counselors, Southwest Resource Center for Science and Engineering.
Workshop participant, National Association for the Advancement of Colored People, Youth Leadership Workshop, Albuquerque, N. Mex.
Consultant, Region XIX Texas Education Association, Secondary Basic Skills Institute, El Paso, Tex.
Consultant, Center for Mathematics Education, Atlanta University, Atlanta, Ga.
Consultant, Reader of Advance Placement Examinations, Education Testing Service.
Consultant, Workshop on Problem Solving, El Paso Public Schools, El Paso, Tex.
Consultant, one-week Short Course on Problem Solving, Ysleta Public Schools, Ysleta, Tex.
Member, University committee to respond to recommendations on the training of teachers of mathematics.
Dean's Representative, doctoral committee, curriculum and instruction.
Course coordinator: MATH 111, spring; MATH 112, fall.

C. L. Walker

Member, American Mathematical Society.
Member, Association for Women in Mathematics.
Member, New Mexico Network for Women in Science and Engineering.
Member, Statewide Articulation Committee.
Referee, Pacific Journal of Mathematics.
Reviewer, Mathematical Reviews.
External member of review team for University of Nebraska Academic Program Review for Department of Mathematics and Statistics.
Member, Screening Committee for Assistant Registrar.

Member, Faculty Senate Faculty Affairs Subcommittee to Study New Faculty Type/Category (non-tenure track-permanent), 1981-1983.
Ex officio member, Department of Mathematical Sciences Advisory Committee.
Ex officio member, Department of Mathematical Sciences Promotion to Professor Committee.
Ex officio member, Department of Mathematical Sciences Promotion to Associate Professor and Tenure Committee.
Member, master's examination committees: mathematics, two.
Member, doctoral comprehensive examination committee, mathematics.

E. A. Walker

Member, Mathematical Association of America.
Member, American Mathematical Society.
Member, American Statistical Association.
Member, Biometric Society.
Member, Sigma Xi.
Member, Phi Kappa Phi.
Member, Board of Editors, Communications in Algebra.
Reviewer, Research Enabling Grant proposal, University of Houston.
Referee, Pacific Journal of Mathematics.
Reviewer, Mathematical Reviews.
External evaluator: Promotion to full professor, two universities; Chairman, one university; Tenure, one university.
Member, Graduate Council.
Member, University-Industry Alliance Task Force.
Member, University-Industry Relations Coordinating Committee.
Member, University Research Council.
Chairman, College of Arts and Sciences Research Affairs Committee, spring; member, fall.
Member, Department of Physics Promotion and Tenure Committee.
Member, Department of Mathematical Sciences Graduate Committee.
Member, doctoral comprehensive examination committees: mathematics, one; counseling and guidance, one.
Member, doctoral final oral examination committees: mathematics, one; education specialties, one.
Chairman, master's examination committees: mathematics, four.
Member, master's examination committees: mathematics, two.

F. D. Williams

Member, American Mathematical Society.
Member, Association of Members of the Institute for Advanced Study.
Member, Phi Beta Kappa.
Member, Pi Mu Epsilon.
Member, College of Arts and Sciences Faculty Affairs Committee.

Crimson Scholar Advisor.
Advisor and member of Alumni Board, Sigma Alpha Epsilon.
Course coordinator, MATH 291, fall.

R. J. Wisner

Member, National Council of Teachers of Mathematics.
Member, Editorial Panel, National Council of Teachers of
Mathematics 1984 Yearbook.
Member, Greater El Paso Council of Teachers of Mathematics.
Member, Mathematical Association of Two-Year Colleges.
Member, Mathematical Association of America, Southwestern
Section.
Consulting editor, Brooks/Cole Publishing Co.
Referee, Scott, Foresman & Co.
Member, Faculty Senate Ad Hoc Committee on Growth, spring.
Member, New Mexico State University recruiting team in April to
Santa Fe and Albuquerque public schools.

J. D. Zund

Member, American Physical Society.
Member, Unione Matematica Italiana.
Member, London Mathematical Society.
Member, Tensor Society.
Member, Seismological Society of America.
Referee, Physical Review Letters.
Referee, Journal of Mathematical Physics.
Referee, Annali di Matematica Pura ed Applicata.
Referee, Journal of the Australian Mathematical Society.
Reviewer, Mathematical Reviews.
Reviewer, Zentralblatt fur Mathematik.
Member, Department of Sociology and Anthropology Promotion and
Tenure Committee.
Member, Department of Mathematical Sciences Promotion to
Associate Professor and Tenure Committee.
Member, Department of Mathematical Sciences Ad Hoc Calculus
Committee.
Course coordinator, MATH 291, spring.

B. PROFESSIONAL MEETINGS ATTENDED

D. M. Arnold

Abelian Group Theory Conference, Honolulu, Hawaii.

R. J. Bagby

Mini-conference on Harmonic Analysis and Probability,
Bloomington, Ind.

K. K. Berver

ACT New Mexico Conference for the Academically Underprepared,
Albuquerque, N. Mex.

C. L. Evans

New Mexico Council of Teachers of Mathematics Annual
Conference, Albuquerque, N. Mex.

E. D. Gaughan

Mathematical Association of America Southwestern Section
Meeting, Tucson, Ariz.
Greater El Paso Council of Teachers of Mathematics, annual
membership meeting, El Paso, Tex.
Greater El Paso Council of Teachers of Mathematics, dinner
meeting, El Paso, Tex.
National Council of Teachers of Mathematics Regional Meeting,
Phoenix, Ariz.
National Council of Teachers of Mathematics Regional Meeting,
New Orleans, La.

R. H. Hunter

Abelian Group Theory Conference, Honolulu, Hawaii.

D. G. Johnson

Quality Education II, Las Cruces.

R. A. Knoebel

Conference on VLSI Systems and Computation, Pittsburgh, Pa.
Principles of Programming Languages, Albuquerque, N. Mex.
Phoenix Conference on Computers and Communications, Phoenix,
Ariz.
Silicon Structures Review, Pasadena, Calif.
19th Design Automation Conference, Las Vegas, Nev.

R. Mines

American Mathematical Society Spring Meeting, Bryn Mawr, Pa.
Abelian Group Theory Conference, Honolulu, Hawaii.

H. T. Nguyen

American Statistical Association, Albuquerque Chapter Meeting,
Santa Fe, N. Mex.
Biometric Society Regional Meeting, San Antonio, Tex.

D. J. Pengelley

American Mathematical Society Annual Meeting, Cincinnati, Ohio.
Conference on Homotopy Theory, Evanston, Ill.

F. Richman

American Mathematical Society Spring Meeting, Bryn Mawr, Pa.
Emmy Noether Symposium Centenary, Bryn Mawr, Pa.
Abelian Group Theory Conference, Honolulu, Hawaii.

G. S. Rogers

Governors' Meeting, Mathematical Association of America Annual Meeting, Cincinnati, Ohio.
Governors' Meeting, Mathematical Association of America, Southwestern Section Meeting, Tucson, Ariz.

W. B. Ruitenburg

Peripatetic Seminars on Sheaves and Logic: Cambridge, England; Louvain-La-Neuve, Belgium.
Sussex Category Meeting, Chelwood Gate, Sussex, England.

C. C. Sherman

American Mathematical Society Annual Meeting, Cincinnati, Ohio.
American Mathematical Society Spring Meeting, Bryn Mawr, Pa.

C. W. Swartz

Workshop on the Measure Theory and its Applications, Sherbrooke, Canada.
American Mathematical Society-Mathematical Association of America Annual Meetings, Cincinnati, Ohio.

J. D. Thomas

Society for Industrial and Applied Mathematics, Conference on Applied Linear Algebra, Raleigh, N.C.

I. E. Vance

National Council of Supervisors of Mathematics Annual Meeting, Toronto, Canada.
National Council of Teachers of Mathematics Annual Conference, Toronto, Canada.
National Council of Teachers of Mathematics Regional Conference, Atlanta, Ga.
National Council of Teachers of Mathematics Regional Conference, Phoenix, Ariz.
Conference on Equity in Mathematics, sponsored by National Council of Teachers of Mathematics, Albuquerque, N. Mex.
New Mexico Council of Teachers of Mathematics Annual Conference, Albuquerque, N. Mex.
Southwest Resource Center Conference for Engineering and Science, Albuquerque, N. Mex.

C. L. Walker

Abelian Group Theory Conference, Honolulu, Hawaii.

E. A. Walker

American Mathematical Society-Mathematical Association of America Annual Meetings, Cincinnati, Ohio.
Society of Clinical Trials Third Annual Meeting, Pittsburgh, Pa.
Biometric Society Western Regional Meeting, San Antonio, Tex.

American Mathematical Society-Mathematical Association of
America Summer Meeting, Toronto, Canada.
American Statistical Association Summer Meeting, Cincinnati,
Ohio.
Abelian Group Theory Conference, Honolulu, Hawaii.

F. D. Williams

American Mathematical Society Annual Meeting, Cincinnati, Ohio.

R. J. Wisner

American Mathematical Society-Mathematical Association of
America Annual Meetings, Cincinnati, Ohio.
Greater El Paso Council of Teachers of Mathematics, throughout
the year, El Paso, Tex.
Louisiana Council of Teachers of Mathematics Annual Meeting,
Lake Charles, La.
Mathematical Association of Two-Year Colleges National Meeting,
Las Vegas, Nev.
National Council of Teachers of Mathematics Annual Conference,
Toronto, Canada.
Mathematical Association of America Regional Meeting, Tucson,
Ariz.
National Council of Teachers of Mathematics Regional
Conference, Phoenix, Ariz.
National Council of Teachers of Mathematics Regional
Conference, Topeka, Kansas.

II. COLLOQUIUM SPEAKERS

Richard J. Bagby, New Mexico State University, "Maximal functions
and rearrangements."
Andrew Baker, University of Chicago, "Hypersurfaces, vector bundles
and Kummer congruences."
Douglas S. Bridges, University College at Buckingham, "Numerical
representation of consumer preferences."
Margaret Cheney, Indiana University, "Inverse scattering in two
dimensions."
Marc Friedman, Cornell University, "Numerical solutions of the
nonlinear magnetostatic problem."
Barry Gardner, University of Tasmania and University of California-
Berkeley, "Radicals, varieties and torsion."
Anthony J. Giovannitti, New Mexico State University, "Extensions of
Butler groups."
Rudiger Gobel, University of Essen, "Endomorphism rings of abelian
groups."
Otto Kegel, Mathematisches Institut der Albert-Ludwigs-Universitat,
"A convexity property of finite sets of 1-dimensional subspaces
in C ."
Warren M. Krueger, New Mexico State University, "Zero's still zero,
even in a bad ring--A mod 4 relation among Stirling numbers."

- Douglas S. Kurtz, New Mexico State University, "Last year's proof of the Littlewood conjecture."
- Robert Maltz, University of Texas at El Paso, "Applications of Riemannian geometry to everyday life."
- Susan Nett, New Mexico State University, "Singular perturbation of certain boundary value problems in a Banach space."
- Bernhard H. Neumann, Australian National University, "Not quite inner automorphisms of groups."
- Hung T. Nguyen, New Mexico State University, "Law of large numbers for continuous-time martingales."
- David J. Pengelley, Massachusetts Institute of Technology, "Cobordism of manifolds, stable homotopy theory, and Thom spectra."
- Peter Renz, Mathematics Editor, W. H. Freeman & Co., "The publishing of mathematics and the mathematics of publishing."
- David R. Richman, University of Illinois-Urbana, "Some results about linear recurrence sequences."
- Fred Richman, New Mexico State University, "Compactly generated Banach spaces."
- Wim B. Ruitenburg, New Mexico State University, "Intuitionistic mathematics in a classical world."
- Clayton C. Sherman, New Mexico State University, "Algebraic K-theory and algebraic geometry."
- Robert O. Stanton, St. John's University and New Mexico State University, "The mean value theorem is mean to cubics."
- Rebekka Struik, University of Colorado-Boulder and New Mexico State University, "Partial converses to LaGrange's theorem."
- Charles W. Swartz, New Mexico State University, "The boundedness principle."
- Charles I. Vinsonhaler, University of Connecticut and New Mexico State University, "Realizing division algebras."
- Francis D. Williams, New Mexico State University, "Homotopies of bounded width."
- Birge Zimmermann-Huisgen, Technische Hochschule-Munich and University of Utah, "Decomposition of direct products of abelian groups."

III. GRANTS AND PROPOSALS

<u>PRINCIPAL INVESTIGATOR(S) AND AGENCY</u>	<u>FUNDED</u>	<u>PENDING</u>
J. M. Adams, R. H. Hunter, B. MacKichan; National Science Foundation	\$60,042	
J. M. Adams, R. H. Hunter; U.S. Army TRASANA	53,769	
R. J. Bagby, D. S. Kurtz; National Science Foundation		\$130,622
R. H. Hunter; Department of Defense University Research Instrumentation Program		239,800

R. H. Hunter, E. A. Walker; National Science Foundation		178,110
R. J. Y. McLeod; National Science Foundation		36,624
M. Mandelkern; National Science Foundation		29,529
H. T. Nguyen; Naval Ocean Systems Center	5,000	
H. T. Nguyen; Naval Ocean Systems Center		25,203
D. J. Pengelley; National Science Foundation		38,820
C. C. Sherman; National Science Foundation	18,282	
C. C. Sherman; National Science Foundation		40,000
E. A. Walker, D. M. Arnold, R. H. Hunter, F. Richman; National Science Foundation	55,400	225,735
E. A. Walker, J. H. Drew (joint proposal with GTE); National Science Foundation		78,223
E. A. Walker, R. H. Hunter; National Science Foundation, Southwest Resource Center for Science and Engineering	6,248	

IV. RESEARCH PAPERS PUBLISHED

- Arnold, D. M., Finite Rank Torsion Free Abelian Groups and Rings, Lecture Notes in Math. 931 (1981), 1-189, Springer-Verlag, Berlin, Heidelberg and New York.
- Arnold, D. M., Endomorphism rings and subgroups of finite rank torsion free abelian groups, Rocky Mountain J. Math. 12 (1982), 241-256.
- Bagby, R. J., Mixed-norm estimates for a class of integral operators, Anal. Math. 8 (1982), 3-8.
- Chawla, M. M., Two-step fourth order P-stable methods for second order differential equations, BIT 21 (1981), 190-193.
- Chawla, M. M., Intervals of periodicity and absolute stability of explicit Nystrom methods for $y''=f(x,y)$, BIT 21 (1981), 455-464.
- Chawla, M. M., Families of fifth order Nystrom methods for $y''=f(x,y)$ and intervals of periodicity, Computing 26 (1981), 247-256.
- Chawla, M. M., Finite difference methods and their convergence for a class of singular two point boundary value problems, Numer. Math. 39 (1982), 341-350.
- Julian, W. H., D. Bridges, A. Calder, R. Mines and F. Richman, Picard's theorem, Trans. Amer. Math. Soc. 269 (2), (1982), 513-520.
- Julian, W. H., D. Bridges, A. Calder, R. Mines and F. Richman, Bounded linear mappings of finite rank, J. Funct. Anal. 43 (2), (1981), 143-148.
- Knoebel, R. A., A decomposition theorem for several-sorted algebras, Colloq. Math. Soc. Janos Bolyai 28 (1982), 387-416.
- Knoebel, R. A., A new proof for the product decomposition of Newman algebras, Algebra Universalis 14 (1982), 135-139.
- Kurtz, D. S., C. Huann-Ming and R. Hunt, The Hardy-Littlewood maximal function on $L(p,q)$ spaces with weights, Indiana Univ. Math. J. 31 (1982), 109-120.

N. Mex.

- Mandelkern, M., Components of an open set, J. Austral. Math. Soc. Ser. A 33 (1982), 249-261.
- Mandelkern, M., Continuity of monotone functions, Pacific J. Math. 99 (1982), 413-418.
- Mines, R. cf. W. H. Julian.
- Mines, R., Completions of linear topologized vector spaces, J. Algebra 74 (2), (1982), 317-327.
- Mines, R. and F. Richman, Separability and factoring polynomials, Rocky Mountain J. Math. 12 (1), (1982), 43-54.
- Nguyen, H. T., On indirect methods in statistical estimation, Proc. Second World Conference on Mathematics at the Service of Man, Canary Islands, (July 1982), 526-530.
- Nguyen, H. T., On the possibilistic approach to the analysis of evidence, Fuzzy Sets and Possibility Theory, R. Yager, Ed. Pergamon Press, 395-401.
- Nguyen, H. T. and T. Pham, Identification of nonstationary diffusion models by method of sieves, SIAM J. Control Optim. 20 (5), (1982), 603-611.
- Richman, F. cf. W. H. Julian.
- Richman, F. cf. R. Mines.
- Richman, F., Meaning and information in constructive mathematics, Amer. Math. Monthly 89 (1982), 385-388.
- Swartz, C. W., The Nikodym theorems for operator measures, Publ. Inst. Math. 29 (43), (1981), 221-227.
- Swartz, C. W., Subfamily-summability for precompact operators and continuous vector-valued functions, Rev. Roumaine Math. Pures Appl. 26 (1982), 731-735.
- Vance, I. E., A partridge in a pear tree, a stack of cubes, and four buckets of balls, The Mathematics Teacher 74 (9), 1981, 698-703.
- Vance, I. E., More on subtraction without borrowing, The Mathematics Teacher 75 (2), (1982), 128-129.
- Vance, I. E., Minimum conditions for congruence of quadrilaterals, School Science and Mathematics LXXXII (5), (1982), 403-415.
- Williams, F. D., A. Calder and J. Siegel, The width of homotopies into spheres, Topology 21 (1982), 281-290.
- Zund, J. D., G. Debney and J. Wilkes, A spin-coefficient approach to type N-fields with twist, Tensor NS 35 (1981), 267-275.
- Zund, J. D. and J. Wilkes, Group-theoretic approach to the Schwarzschild solution, Amer. J. Phys. 50 (1982), 25-27.
- Zund, J. D., The projective geometry of the energy-momentum tensor in general relativity, Tensor NS 36 (1982), 61-67.
- Zund, J. D. and J. Wilkes, Type N twist-free Hauserlike gravitational fields, Tensor NS 37 (1982), 16-18.
- Zund, J. D. and R. Harris, An investigation of Kruchkovich's homogeneous space-times, Tensor NS 37 (1982), 85-89.
- Zund, J. D., G. Debney and J. Wilkes, A type III solution with twist, Tensor NS 37 (1982), 90-92.
- Zund, J. D. and J. Wilkes, An operator derivation of some Kronecker Delta identities, Tensor NS 37 (1982), 162-164.

V. RESEARCH PAPERS PRESENTED

- Arnold, D. M., "Introduction to torsion free abelian groups of finite rank," University of Montana, Missoula, Mont.
- Arnold, D. M., "Pure subgroups of finite rank completely decomposable groups II," Abelian Group Theory Conference, Honolulu, Hawaii.
- Bagby, R. J., "Maximal functions and rearrangements," New Mexico State University, Las Cruces.
- Bagby, R. J., "Strengthened maximal functions and pointwise convergence," Miniconference on Harmonic Analysis and Probability, Bloomington, Ind.
- Evans, C. L., "Soap-film geometry," New Mexico Council of Teachers of Mathematics Annual Conference, Albuquerque, N. Mex.
- Gaughan, E. D., "Flexagons for fun and profit," National Council of Teachers of Mathematics Regional Conference, Phoenix, Ariz.
- Giovannitti, A. J., "Extensions of Butler groups," New Mexico State University, Las Cruces.
- Hunter, R. H., "Finite valuated p-groups," Abelian Group Theory Conference, Honolulu, Hawaii.
- Knoebel, R. A., "Very large scale integration," Jet Propulsion Laboratory, Pasadena, Calif.
- Krueger, W. M., "Zero's still zero, even in a bad ring--A mod 4 relation among Stirling numbers," New Mexico State University, Las Cruces.
- Kurtz, D. S., "Last year's proof of the Littlewood conjecture," New Mexico State University, Las Cruces.
- Kurtz, D. S., "Weighted norm inequalities for the Hardy-Littlewood maximal function," University of New Mexico, Albuquerque, N. Mex.
- McLeod, R. J. Y., invited address, "Graduate study in mathematics in the United States," Murdoch University, Western Australia.
- Mines, R., "Valuation theory," American Mathematical Society Regional Meeting, Special Session on Constructive Algebra, Bryn Mawr, Pa.
- Nett, S. A., "Singular perturbation of certain boundary value problems in a Banach space," New Mexico State University, Las Cruces.
- Nguyen, H. T., G. S. Rogers and E. A. Walker, "Inferences in survival analysis and competing risks," Biometric Society Regional Meeting, San Antonio, Tex.
- Nguyen, H. T., "Law of large numbers for continuous-time martingales," New Mexico State University, Las Cruces.
- Nguyen, H. T., "On Grenander's method of sieves," University of Texas at El Paso, El Paso, Tex.
- Pengelley, D. J., "The A-algebra structure of Thom spectra: MSO as an example," American Mathematical Society Annual Meeting, Cincinnati, Ohio.

- Pengelle, D. J., "Graphs, surfaces, and map coloring": Williams College, Williamstown, Mass.; Smith College, Northampton, Mass.; Mount Holyoke College, South Hadley, Mass.; Colby College Waterville, Maine; Haverford College, Haverford, Pa.
- Pengelle, D. J., "Cobordism rings of manifolds, stable homotopy theory, and Thom spectra": Vanderbilt University, Nashville, Tenn.; Duke University, Durham, N.C.; New Mexico State University, Las Cruces, N. Mex.; Lehigh University, Bethlehem, Pa.
- Phillips, K. L., "Local fields and singular integrals," University of Colorado, Boulder, Colo.
- Phillips, K. L., "Rotation degree in image processing," Denver University, Denver, Colo.
- Phillips, K. L., "Vector methods in edge detection," Martin-Marietta Corporation, Denver, Colo.
- Phillips, K. L., "Packing, covering, and scheduling," University of Colorado, Boulder, Colo.
- Phillips, K. L., "SL(R) and the Cartan decomposition," New Mexico State University, Las Cruces.
- Richman, F., "Compactly generated Banach spaces," New Mexico State University, Las Cruces.
- Richman, F., "Constructive mathematics, the impact of the computer on pure mathematics," Queensland University, Brisbane, Australia.
- Richman, F., "Meaning and information in constructive mathematics," Australian National University, Canberra, Australia.
- Richman, F., "Finite dimensional algebras--a constructive approach," Melbourne University, Melbourne, Australia.
- Richman, F., "Constructive abelian group theory," American Mathematical Society Regional Meeting, Special Session on Constructive Algebra, Bryn Mawr, Pa.
- Richman, F., "A survey of mixed groups," Abelian Group Theory Conference, Honolulu, Hawaii.
- Rogers, G. S. cf H. T. Nguyen.
- Ruitenbug, W. B., "Intuitionistic mathematics in a classical world," New Mexico State University, Las Cruces.
- Sherman, C. C., "Algebraic K-theory and algebraic geometry," New Mexico State University, Las Cruces.
- Swartz, C. W., "Nikodym boundedness theorem and the uniform boundedness principle," Workshop on the Measure Theory and its Applications, Sherbrooke, Canada.
- Swartz, C. W., "The uniform boundedness principle," Appalachian State University, Boone, N.C.
- Swartz, C. W., "The boundedness principle," New Mexico State University, Las Cruces.
- Vance, I. E., "Patterns, patterns, patterns," New Mexico Council of Teachers of Mathematics Annual Conference, Albuquerque, N. Mex.
- Vance, I. E., "A look at problem solving techniques using patterns," National Council of Teachers of Mathematics Regional Conference, Atlanta, Ga.

- Vance, I. E., "Minimum conditions for congruence of quadrilaterals," National Council of Teachers of Mathematics Annual Conference, Toronto, Canada; National Council of Teachers of Mathematics Regional Conference, Phoenix, Ariz.
- Vance, I. E., "Some comments on the learning and teaching of mathematics with respect to minorities," Southwest Resource Center Conference for Engineering and Science, Albuquerque, N. Mex.
- Vance, I. E., "A need for basic arithmetic skills at the secondary level," The Secondary Basic Skills Institute, El Paso, Tex.
- Walker, E. A. cf. H. T. Nguyen.
- Walker, E. A., "Finite valuated p -groups," Abelian Group Theory Conference, Honolulu, Hawaii.
- Walker, E. A., M. Bauer and C. Redmond, "Randomization with stratification and institution balance for multi-institution clinical trials," American Statistical Association Summer Meeting, Cincinnati, Ohio.
- Williams, F. D., invited paper, "The width of homotopies," Special Session on Algebraic Topology, American Mathematical Society Annual Meeting, Cincinnati, Ohio.
- Williams, F. D., "Homotopies of bounded width," New Mexico State University, Las Cruces.
- Williams, F. D., "Topology," University of Missouri, St. Louis, Mo.
- Williams, F. D., "Deformations in manifolds," University of Missouri, Columbia, Mo.
- Wisner, R. J., "Summing by sharing," National Council of Teachers of Mathematics Annual Conference, Toronto, Canada.
- Wisner, R. J., "The first-born syndrome," National Council of Teachers of Mathematics Regional Conference, Topeka, Kans.
- Wisner, R. J., "Exercises for arithmetic skills," Louisiana Council of Teachers of Mathematics Annual Conference, Lake Charles, La.
- Wisner, R. J., "Surprising arithmetic progressions," National Council of Teachers of Mathematics Regional Conference, Phoenix, Ariz.
- Wisner, R. J., "Recruiting, retraining, and retaining of teachers," National Council of Teachers of Mathematics Regional Conference, Phoenix, Ariz.