

Annual Report 1981

I. GENERAL DEVELOPMENTS

A. PERSONNEL CHANGES AND DEVELOPMENTS

New assistant professors in the Department of Mathematical Sciences in fall semester 1981 were Douglas S. Kurtz, Ph.D. 1978, Rutgers University, and Hung T. Nguyen, Ph.D. 1975, Université de Lille, Paris. Professor Kurtz's area of research is harmonic analysis and Professor Nguyen's area of research is mathematical statistics. Assistant Professors Mary Anne Maher and Darell J. Johnson resigned from the department, effective end of spring semester 1981.

Richard Bagby was promoted to professor, effective fall semester 1981. Faculty members Roger Hunter, Robin McLeod and Clayton Sherman were promoted to associate professor, effective fall semester. Susan Nett, teaching specialist, was awarded the Ph.D. in mathematics from the University of New Mexico in December.

On sabbatical leave spring semester were Ray Mines and John Thomas. Ray Mines was teaching and doing research in abelian groups at the University of Hawaii, and John Thomas was doing research in numerical analysis and applied mathematics at the University of Dundee in Scotland. On sabbatical leave fall semester were John DePree and Richard Bagby. 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.

Clayton Sherman was teaching and doing research in algebraic K-theory at Texas Tech University on leave without pay, both spring and fall semesters. Also on leave without pay spring semester was Darell J. Johnson, who was enrolled in a program of study in the Department of Physics at Massachusetts Institute of Technology. On leave without pay fall semester was Francis D. Williams, who was teaching and doing research in algebraic topology at the University of Missouri at St. Louis.

Visiting faculty spring semester were M. M. Chawla, on leave from the Indian Institute of Technology, New Delhi; D. G. Kabe, on sabbatical leave from Saint Mary's University, Halifax; Arvind Shah, and Judy H. Moore. Visiting faculty fall semester were Piotr Antosik, on leave from the Mathematical Institute of the Polish Academy of Sciences, Katowice Branch; Theodore Faticoni, Anthony J. Giovannitti, and Clem Ota. Visiting the department spring semester was Donna Beers, on sabbatical leave from Wellesley College.

Fifteen graduate and undergraduate students were initiated into the mathematics honorary, Pi Mu Epsilon, at a ceremony May 7. In spring the members of Pi Mu Epsilon sponsored a problem contest. First prize, a \$25 mathematics book, was won by mathematics major Tim Cartlidge. David Marlin, a junior majoring in mathematics, was awarded the Jearl R. Lindley Scholarship in mathematics in fall. Randall G. Bryant, mathematics and computer science major, was awarded the Alumni Association's Annual Full Tuition Scholarship for 1981-82. During spring semester, the department employed 28 Crimson Scholars, majoring in mathematics or an area which utilizes mathematics, as classroom assistants. In fall semester, the department employed 17 Crimson Scholars.

In 1981, 12 students received the Bachelor of Science in mathematics, 4 students received the Bachelor of Science in Engineering with a minor in mathematics, 1 student received the Bachelor of Science in Arts and Sciences with a minor in mathematics, 5 students received the Master of Science in mathematics and 1 student received the Ph.D. in mathematics.

B. NEW OR REVISED PROGRAMS

Development of the computer based instructional materials for trigonometry, sponsored by the National Science Foundation CAUSE (Comprehensive Assistance to Undergraduate Science Education) grant, begun in summer 1980, continued throughout 1981. Materials, to the extent they were ready, were used by students in one section of MATH 180: Trigonometry, fall semester 1981, as a supplement to lectures given in the course. The materials are being developed so that they may be used by the students on their own, as a supplement to lectures, as "homework," or even as home study. Classroom demonstration programs are also being developed. More challenging problems and discussion materials are included as separate items. Course materials are designed to provide any level of instruction in trigonometry, from an elementary introduction to a thorough preparation for calculus. The current version of the course is being taught as a university freshman level calculus preparation. However, the course can be reconfigured for almost any use, including high school introduction. It is expected that the course will pass through many refinements as a result of careful study of the data gathered while the materials are in use.

The Department of Mathematical Sciences has been fortunate in that the Science and Engineering Bond Issue funds for scientific equipment have come at a time of explosive growth in computer (and especially microcomputer) use by mathematicians. The department had very little equipment

before 1980. The equipment acquired in 1980 and 1981, which included seven Terak microcomputers, one Perq microcomputer, six Data Media terminals and auxiliary equipment, has had a tremendous impact on the research output of the department faculty and on the instructional program of the department. Professors Gerald Rogers and Elbert Walker have made extensive use of computers in statistical research, teaching and consulting. Students are introduced to standard statistical packages through classroom demonstrations and, for some very small classes, through individual assistance. Professors Don Johnson and Elbert Walker are conducting an ongoing statistical examination of student performance in mathematics courses. Professors John Thomas and Robin McLeod and graduate students use the computers extensively for study and research in numerical analysis. Professor Keith Phillips used department computing facilities to provide a first implementation of a new combinatorial scheduling algorithm he had developed, and will make increasingly sophisticated use of computers in his research in singular integral theory, image processing and combinatorial optimization.

Recent work by Professors Roger Hunter, Fred Richman and Elbert Walker has led to a number of classification problems in the the study of finite valuated abelian groups which are amenable to computer solution. Algorithms to list finite valuated trees were implemented on the main frame in summer 1981. Professor Hunter has implemented a bibliography system on the main frame which is in use by abelian group theorists in the department. These programs will be implemented on department microcomputers when the equipment is upgraded to provide sufficient memory and storage.

Professor Arthur Knoebel has made use of computing facilities for his work in universal algebra. Professor Joaquin Loustaunau has written a general purpose graphics package that provides editing features, is able to graph most functions and is "user friendly." One of the versions uses a package developed by Professor Barry MacKichan for entering functions as expressions. The color Terak version uses a plotter unit developed by Professor Hunter to operate the Houston plotter. The program is in use within the department and has been made available to graduate students in electrical engineering and chemistry.

Professor Knoebel worked with Professor Ingraham (physics) on using computers to produce plots of iterated exponentials. Professor Knoebel is also making use of a new computer language, PROLOG, available on Teraks and on the Department of Computer Science's PDP 11/34, to illustrate recent advances in proving correctness of programs. This is leading to further

research in theoretical computer science by faculty and graduate students in the Departments of Mathematical Sciences and Computer Science.

Professor MacKichan has written a function graphing program and a number of differential equations solvers which can be used interactively. These will be used extensively by calculus students once enough microcomputers for student use are available. Professor Knoebel used departmental equipment to illustrate converging and diverging sequences and series and to display scalar and vector fields in the classroom.

II. RESEARCH ACTIVITIES

A. PUBLICATIONS

In 1981, 18 members of the faculty had 33 research papers published in professional journals or conference proceedings. In addition, 32 faculty members attended one or more professional meetings and presented 38 research papers. Fourteen faculty members presented 30 colloquia at universities.

B. COLLOQUIA, SEMINARS, AND CONFERENCES

During 1981 the department held 20 colloquia, with 10 presented by local faculty and students and 10 by invited speakers. Active seminars included abelian groups, computational geometry, constructive mathematics, mathematical economics, group representations, harmonic analysis, numerical analysis, real analysis, ring theory, and statistics.

The department sponsored a mathematics education conference, October 7, 1981, immediately preceding a regional National Council of Teachers of Mathematics meeting held in El Paso. The participants included 7 faculty members and students from New Mexico State University and 23 from 19 states and Canada.

C. RESEARCH GRANTS AND PROPOSALS

Five research proposals were submitted to federal agencies by five faculty members, two new and two continuing proposals (seven faculty members) were funded in 1981 for a total of \$194,918. Four new and two continuing proposals (nine faculty members), \$844,876, were pending at the end of 1981.

The funding of the National Science Foundation CAUSE grant included a commitment of \$113,562 in matching funds from New Mexico State University for the second year, with an additional \$55,580 pending.

III. CRITICAL ANALYSIS AND RECOMMENDATIONS

The program of individually paced courses in arithmetic and algebra offered by the Department of Mathematical Sciences continued to expand rapidly during 1981, reaching a new high of over 2,600 students enrolled in the four courses in the fall. Student evaluations were collected at the end of fall semester. Some discontent was expressed, of course, but the primary response was one of enthusiasm for the personalization present in these courses. The close student-tutor relationship, a key element in the design of this program, received very high marks from the students. It was apparent from many of the responses that additional staffing is vitally needed. Consequently, additional tutors will be hired in order to reduce the student-tutor ratio for spring 1982, if at all possible, and additional teaching specialists will be requested for 1982-83.

Some students expressed a desire for the type of explanation given in a lecture, but it is unclear whether enough students will take advantage of supplementary lectures to justify their existence. Optional lectures were offered in the fall to enhance the arithmetic and basic algebra courses. Attendance at the lectures for both courses was small. However, lectures will be offered again in the spring for these two courses and for the other two individually paced algebra courses.

IV. GOALS AND OBJECTIVES

- A. GOAL: The department will strive to maintain continued excellence in research and professional activities.
1. Objective: The department will provide faculty members who are actively involved in mathematical research with the time, encouragement, and support services they require for their research.
 2. Objective: The department will sponsor an active program of colloquia to provide indepth contact with experts in various research areas.
 3. Objective: The department will continue to encourage and support research seminars, including interdepartmental seminars, to explore areas of applications of mathematics.
 4. Objective: The department will 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.
 5. Objective: The department will continue to 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.
- B. GOAL: The department will work to develop and strengthen the graduate program in mathematics.
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.
 2. Objective: The department will maintain communication with mathematicians at White Sands, and will continue to offer sequences of courses at appropriate times to attract these potential students.
 3. Objective: The department will continue to 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.

4. Objective: The faculty of the department will continue to support the doctoral programs in mathematics and statistics, even though this will in some cases result in a teaching load above normal responsibility.
 5. Objective: The department will maintain close ties with the Department of Computer Science, supporting its new doctoral program, as well as its master's and undergraduate programs.
 6. Objective: The department will continue to 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.
 7. Objective: The department will continue to provide graduate training in the use of state-of-the-art computer technology in mathematical applications.
 8. Objective: The department will continue its program of supervision for graduate assistants teaching lecture sections.
 9. Objective: The department will continue to hire visiting faculty primarily on the basis of their potential to further the graduate and research programs, and to teach mathematics effectively.
 10. Objective: The department will continue to request new faculty positions to help develop the graduate programs, particularly those in numerical analysis, statistics, and applied mathematics.
- C. GOAL: The department will work to strengthen the programs in mathematics and statistics for undergraduate majors and minors.
1. Objective: The department will 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.
 2. Objective: The department will continue to 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.

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.
 4. Objective: The department will seek support for expanded computer clusters on campus to meet the needs of students majoring in mathematics.
- D. GOAL: It is the intention of the Department of Mathematical Sciences to provide the best possible program of service courses.
1. Objective: The department will continue the reevaluation of the undergraduate mathematics curriculum, keeping in mind the needs of the students from all colleges. The undergraduate committee will reexamine the calculus sequence, considering shortening the sequence to three semesters and introducing a sophomore level linear algebra course for science and engineering students.
 2. Objective: The department will give a mathematics placement examination to new students, a program begun in 1979, and continue to evaluate the effectiveness of this placement program. The department will develop a new placement examination to meet the needs of students in the College of Education.
 3. Objective: The department will continue to develop its 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.
 4. Objective: The department will continue to 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.
 5. Objective: The department will continue 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.
 6. Objective: The department will begin extensive use of microcomputers by students in several undergraduate

courses, including courses in finite mathematics and numerical analysis.

7. Objective: The department will 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.
8. Objective: The department will continue to 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.

Annual Report
1981I. PERSONNEL ACTIVITIESA. PROFESSIONAL ACTIVITYP. Antosik

Member, Polskie Towarzystwo Matematyczne.

Vice President, Polish Mathematical Society, Upper-Silesia Branch.

Head, Mathematical Olympic Committee for the Silesian region.

Reviewer, mathematics paper for the Silesian University publisher.

Reviewer, Mathematical Reviews.

Referee, Ph.D. thesis, Mathematical Institute of the Polish Academy of Sciences, Katowice, Poland: Cz. Klis, J. Beerzyk, Z. Tye.

Member, Scientific Consul Board of the Mathematical Institute of the Politechnical School at Glivice.

D. M. Arnold

Member, American Mathematical Society.

Member, Mathematical Association of America.

Referee, Pacific Journal of Mathematics.Referee, Rocky Mountain Journal of Mathematics.

Associate Department Head, spring.

Ex officio member, Department of Mathematical Sciences Advisory Committee, spring.

Member, Department of Mathematical Sciences Undergraduate Committee, summer and fall.

Chairman, doctoral comprehensive examination committee, mathematics.

Chairman, doctoral committee: U. Albrecht.

Member, doctoral final oral examination committee, mathematics.

Dean's Representative, master's examination committee, electrical engineering.

R. J. Bagby

Member, American Mathematical Society.

Member, Mathematical Association of America.

Member, American Association of University Professors.

Referee, National Science Foundation, two research proposals.

Reviewer, Mathematical Reviews.Reviewer, Zentralblatt für Mathematik.

Member, College of Arts and Sciences Curriculum and Educational Policies Committee, spring.

Member, Department of Mathematical Sciences Undergraduate Committee, spring.

Member, master's examination committee, physics.

M. F. Combs

Member, National Council of Teachers of Mathematics.

J. D. DePree

Member, American Mathematical Society.

Member, Board of Governors, Pacific Journal of Mathematics.

Referee, Pacific Journal of Mathematics.

Member, College of Arts and Sciences Bachelor of Individualized Studies Committee, spring.

Member, Distinguished Visiting Professorship Committee, spring.

Member, Department of Mathematical Sciences Committee for Written Comprehensive Examinations.

Course coordinator, MATH 192.

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.

Faculty adviser, Pi Mu Epsilon.

E. D. Gaughan

Member, National Council of Teachers of Mathematics.

Workshop chairman and member of Program Planning Committee, National Council of Teachers of Mathematics Regional Meeting, El Paso, Tex.

Member, Greater El Paso Council of Teachers of Mathematics.

Member, Mathematical Association of America.

Institutional representative to Mathematical Association of America.

Secretary-Treasurer, Mathematical Association of America, Southwestern Section.

Chairman, Department of Mathematical Sciences Undergraduate Committee, fall; member, spring.

Member, Board of Trustees, Ralph B. Crouch Scholarship Fund.

Member, Board of Trustees, Willoughby L. Nason Scholarship Fund.

Departmental coordinator, fund raising campaign for United Way of Dona Ana County.

Course coordinator and faculty supervisor for graduate assistants, MATH 110, 191.

Reader-consultant, precalculus project for Scott, Foresman & Co.

Consultant, New Mexico Department of Education Meeting on Mathematics Textbook Adoptions, Albuquerque, N. Mex.

Adviser, College of Arts and Sciences Advising Center.

J. B. Glever

Member, American Mathematical Society.
Member, Mathematical Association of America.
Member, Association of Symbolic Logic.
Member, American Association of University Professors.
Member, Faculty Senate, spring.
Member, Faculty Senate University Affairs Committee, spring.
Member, Faculty Senate Committee on Committees, spring.
Chairman, University Appeals Board, spring and summer.
Member, College of Arts and Sciences Curriculum and
Educational Policies Committee, fall.
Course coordinator, MATH 292.

A. J. Giovannitti

Member, American Mathematical Society.

R. H. Hunter

Member, American Mathematical Society.
Member, Mathematical Association of America.
Member, Australian Mathematical Society.
Member, Institute of Electrical and Electronic Engineers,
Computer Society.
Member, Association for Computing Machinery.
Referee, Rocky Mountain Journal of Mathematics.
Referee, Pacific Journal of Mathematics.
Referee, Australian Journal of Mathematics.
Referee, Proceedings of the American Mathematical Society.
Referee, Transactions of the American Mathematical Society.
Referee, National Science Foundation research proposals.
Referee, National Science Foundation CAUSE (Comprehensive
Assistance for Undergraduate Science Education)
proposals.
Reviewer, Mathematical Reviews.
Member, informal committee on word processing at New Mexico
State University.
Member, Computer Advisory Group.
Computer Coordinator, Department of Mathematical Sciences.
Member, Department of Mathematical Sciences Committee for
Written Comprehensive Examinations.
Course coordinator, MATH 230, spring.
Course coordinator and faculty supervisor for graduate
assistants, CAUSE MATH 180, fall.
Member, doctoral final oral examination committee,
mathematics.
Member, doctoral comprehensive examination committee:
mathematics, two.
Member, master's examination committee, mechanical
engineering.
Consultant, Las Cruces High School and Mayfield High School,
introducing computers in curriculum.

Maintained computer software for Mathematics Learning Center.
Maintained technical text editing system for Department of
Mathematical Sciences, Department of Computer Science,
Department of Psychology, College of Engineering, and
Computer Center.

D. G. Johnson

Member, American Mathematical Society.
Member, Mathematical Association of America.
Chairman, Mathematical Association of America, Southwestern
Section, term ended April.
Organizer, Mathematical Association of America, Southwestern
Section Meeting.
Panel discussion chair, remedial instruction, Mathematical
Association of America, Southwestern Section Meeting,
Las Cruces, N. Mex.
Member, Association for Supervision and Curriculum
Development.
Panel participant, "The gaps," New Mexico Association for
Supervision and Curriculum Development Meeting,
Las Cruces, N. Mex.
Reviewer, Mathematical Reviews.
Member, Retention Committee.
Member, Mathematics/Engineering Committee.
Ex officio member, Department of Mathematical Sciences Advisory
Committee.
Chairman, Department of Mathematical Sciences Undergraduate
Committee, spring; member, fall.
Member, Department of Mathematical Sciences Committee for
Written Comprehensive Examinations.
Director, Mathematics Learning Center.
Course coordinator and faculty supervisor for graduate
assistants, MATH 100N, 102N, 115, 180, 185.
Consultant on curriculum and textbook changes, Las Cruces
High School and other New Mexico high schools.
Writer, NMSU Basic Skills Examination in Mathematics.

W. H. Julian

Member, American Mathematical Society.
Member, American Association for the Advancement of Science.
Member, Sigma Xi.
Member, Rio Grande Historical Collections.
Member, American Astronomical Association.
Reviewer, Mathematical Reviews.
Coordinator, Library and Mathematics Reading Room for the
Department of Mathematical Sciences.
Department photographer, maintaining permanent records of
department members and colloquium speakers.

J. E. Kist

Member, American Mathematical Society.
Member, Mathematical Association of America.
Member, American Association for the Advancement of Science.
Member, Sigma Xi.
Member, Phi Beta Kappa.
Reviewer, Mathematical Reviews.
Reviewer, Zentralblatt für Mathematik.
Member, Department of Mathematical Sciences Undergraduate
Committee.
Member, Department of Mathematical Sciences Promotion to Full
Professor Committee.
Member, Department of Mathematical Sciences Committee for
Written Comprehensive Examinations.
Member, doctoral comprehensive examination committee,
mathematics.
Course coordinator, MATH 291.

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 Electronic Engineers,
Computer Society.
Member, London Mathematical Society.
Member, Mathematical Association of America.
Member, New Mexico Academy of Science.
Member, Osterreichische Mathematische Gesellschaft.
Member, Sociedad Mathematica Mexicana.
Member, Societe Mathematique de Belgique.
Member, Societe Mathematique Suisse.
Member, Society for Industrial and Applied Mathematics.
Referee, American Mathematical Monthly.
Member, Department of Mathematical Sciences Graduate
Committee.
Member, Department of Mathematical Sciences Committee for
Written Comprehensive Examinations.
Chairman, master's examination committee, mathematics;
member, computer science.
Member, doctoral comprehensive examination committee,
mathematics.
Course coordinator, MATH 230.

W. M. Krueger

Member, American Mathematical Society.
Member, Pi Mu Epsilon.
Reviewer, Zentralblatt für Mathematik.
Member, College of Arts and Sciences Improvement of
Instruction and Student Relations Committee.

Member, College of Arts and Sciences Improvement of
Instruction and Student Relations Committee, Student
Appeals Board.
Member, Department of Mathematical Sciences Undergraduate
Committee, fall.
Member, Department of Mathematical Sciences Committee for
Written Comprehensive Examinations.
Chairman, doctoral committee: M. Hickman.
Member, doctoral comprehensive examination committee:
mathematics, three.
Member, master's examination committee: mathematics, two.
Course coordinator and faculty supervisor for graduate
assistants, MATH 142.

A. H. Kruse

Member, American Mathematical Society.
Member, Mathematical Association of America.
Member, Sigma Xi.
Member, American Association of University Professors.
Referee, Pacific Journal of Mathematics.
Referee, Topology and its Applications.
Referee, Rocky Mountain Journal of Mathematics.
Member, Board of Editors, Rocky Mountain Journal of
Mathematics.
Chairman, Department of Mathematical Sciences Promotion to
Full Professor Committee.
Member, master's examination committee, mathematics.

D. S. Kurtz

Member, American Mathematical Society.
Member, Mathematical Association of America.
Referee, Proceedings of the American Mathematical Society.
Referee, Canadian Mathematical Bulletin.
Referee, Mathematical Reviews.

J. O. Loustaunau

Member, American Mathematical Society.
Member, New Mexico Academy of Sciences.
Course coordinator, MATH 192.
Undergraduate adviser, spring.
Member, Board of Directors, Dona Ana Chapter of the American
Red Cross.
Member, Board of Directors, United Way of Dona Ana County.

B. MacKichan

Member, American Mathematical Society.
Reviewer, Mathematical Reviews.
Member, Department of Mathematical Sciences Advisory
Committee.

Chairman, doctoral comprehensive examination committee,
mathematics; member, computer science.
Consultant, Terak Corporation.
Maintained technical text editing system for Department of
Mathematical Sciences, Department of Computer Science,
Department of Psychology, College of Engineering, and
Computer Center.

R. J. Y. McLeod

Member, Institute of Mathematics and its Applications.
Member, International Association for Mathematics and
Computers in Simulation.
Referee, Journal of the Institute of Mathematics and its
Applications.
Reviewer, Mathematical Reviews.
Judge, Southwest New Mexico Regional Science and Engineering
Fair, Las Cruces, N. Mex.
Member, Department of Mathematical Sciences Graduate
Committee.
Member, Department of Mathematical Sciences Committee for
Written Comprehensive Examinations.
Chairman, doctoral comprehensive examination committee,
mathematics.
Doctoral thesis adviser, National Institute for Mathematical
Sciences, Pretoria, South Africa: L. Baart.
Guest speaker, Gadsden Career Week, Gadsden High School,
Gadsden, N. Mex.
Participant, research seminars: National Research Institute
for Mathematical Sciences, Pretoria, South Africa;
University of Capetown, University of Stellenbosch, and
University of Orange Free State, South Africa; Reading
University, England.
Course coordinator, MATH 392.

M. Mandelkern

Member, American Mathematical Society.
Member, London Mathematical Society.
Reviewer, Mathematical Reviews.
Chairman, Department of Mathematical Sciences Tenure and
Promotion to Associate Professor Committee.
Consultant, Pediatric Cardiology, Medical School, University
of Arizona, Tucson, Ariz.

R. Mines

Member, American Mathematical Society.
Member, Mathematical Association of America.
Member, Deutsche Mathematiker-Vereinigung.
Referee, London Journal of Mathematics.
Reviewer, Mathematical Reviews.

Chair, session for contributed papers at the L.E.J. Brouwer Centenary Conference, Koninklijke Academie van Wetenschappen and Nederlands Wiskundig Genootschap, Noordwijkerhout, Netherlands.

Member, Faculty Senate Ad Hoc Committee on Retrenchment.

Member, Faculty Senate.

Member, Faculty Senate University Affairs Committee.

Member, College of Arts and Sciences Faculty Affairs Committee.

Colloquium Chairman, Department of Mathematical Sciences.

Course coordinator and faculty supervisor for graduate assistants, STAT 251.

Crimson Scholar Adviser, mathematics.

S. A. Nett

Member, American Mathematical Society.

Member, Mathematical Association of America.

H. T. Nguyen

Member, Institute of Mathematical Statistics.

Member, American Mathematical Society.

Referee, Institute of Electrical and Electronic Engineers Transactions on Automatic Control.

Referee, Society for Industrial and Applied Mathematics Journal on Control and Optimization.

Reviewer, Mathematical Reviews.

Member, master's examination committee, mathematics.

C. Z. Ota

Member, American Mathematical Society.

Member, Mathematical Association of America.

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.

Reviewer, Zentralblatt für Mathematik.

Editor, W. H. Freeman & Co.

Chairman, College of Arts and Sciences Planning Committee.

Chairman, Department of Mathematical Sciences Graduate Committee.

Member, Department of Mathematical Sciences Advisory Committee.

Chairman, doctoral committees: L. Jacobs, J. Kirby.

Member, doctoral final oral examination committee, mathematics.

Chairman, master's examination committee: mathematics, three.

Chairman, doctoral comprehensive examination committee:
mathematics, two; member, one.

F. Richman

Member, American Mathematical Society.
Member, Mathematical Association of America.
Member, Society for Industrial and Applied Mathematics.
Member, London Mathematical Society.
Referee, Proceedings of the American Mathematical Society.
Referee, National Science Foundation.
Reviewer, Mathematical Reviews.
Coeditor, Constructive Mathematics (Las Cruces), Lecture Notes in Math. 873, pp. 347, Springer-Verlag, Berlin, Heidelberg and New York, 1981.
Book reviewer, Journal of Symbolic Logic.
Member, Department of Mathematical Sciences Promotion to Full Professor Committee.
Member, Department of Computer Science Committee for Written Comprehensive Examinations.
Member, doctoral comprehensive examination committee:
mathematics, one; computer science, one.
Consultant, Institute for Defense Analyses, Princeton, N. J.

G. S. Rogers

Member, Institute of Mathematical Statistics.
Member, American Statistical Association.
Member, Mathematical Association of America.
Institutional contact, American Statistical Association.
Member, Board of Governors, Mathematical Association of America, 1979-1982.
Referee, Linear/multilinear algebra, American Statistician.
Reviewer, Brooks/Cole Publishing Co.
Presenter, with H. Daw and R. Wisner, "Alternative models for enrollment projection," Faculty Senate Retreat, Las Cruces, N. Mex.
Adviser, College of Arts and Sciences Advising Center.
Member, Department of Mathematical Sciences Undergraduate Committee.
Member, Department of Mathematical Sciences Tenure and Promotion to Associate Professor Committee.
Member, master's examination committee: mathematics, two.
Adviser, undergraduate mathematics majors.
Course coordinator and faculty supervisor for graduate assistants, MATH 135, 136.
Course coordinator, STAT 371.

C. C. Sherman

Member, American Mathematical Society.

C. H. Swartz

Member, Mathematical Association of America.
Member, Society for Industrial and Applied Mathematics.
Institutional representative to Rocky Mountain Mathematics Consortium.
Reviewer, Mathematical Reviews.
Reviewer, Zentralblatt für Mathematik.
Member, Department of Mathematical Sciences Advisory Committee.
Member, Department of Mathematical Sciences Committee for Written Comprehensive Examinations.
Course coordinator and faculty supervisor for graduate assistants, MATH 135, 136.
Member, master's examination committee: mathematics, two.
Member, doctoral comprehensive examination committee, mathematics.

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.
Chairman, doctoral committees: A. Dare, J. Giever, T. Larkin.
Member, doctoral comprehensive examination committee: mathematics, three.
Member, master's examination committee, mathematics.
Faculty supervisor, William Lowell Putnam Mathematics Competition.

I. E. Vance

Member, New Mexico Council of Teachers of Mathematics.
Member, National Council of Teachers of Mathematics.
Member, School Science and Mathematics Association, Inc.
Member, Mathematical Association of America.
Member, El Paso Council of Teachers of Mathematics.
Member, National Council of Supervisors of Mathematics.
Member, National Association of Mathematicians.
Reader, Education Testing Service, Advance Placement in Calculus Reading Group, Trenton, N. J.
Vice President for Universities, New Mexico Council of Teachers of Mathematics.
Member, NAACP (National Association for the Advancement of Colored People) Auditing Committee.
Organizer, Conference on Mathematics Education, Las Cruces, N. Mex.
Consultant, Ysleta Independent School District, El Paso, Tex.
Speaker, "Texas mathematics assessment trouble spots," Ysleta Independent School District Mathematics In-Service Program, Ysleta, Tex.

Member, Committee to Review Ethnic Studies Offices and Programs at New Mexico State University.
Chairman, Department of Mathematical Sciences Ad Hoc Mathematics Education Committee.
Course coordinator and faculty supervisor for graduate assistants, MATH 142.
Course coordinator, MATH 112.

C. L. Walker

Member, American Mathematical Society.
Member, Association for Women in Mathematics.
Member, Phi Kappa Phi.
Department Head.
Ex officio member, Department of Mathematical Sciences Tenure and Promotion to Associate Professor Committee.
Ex officio member, Department of Mathematical Sciences Promotion to Full Professor Committee.
Ex officio member, Department of Mathematical Sciences Advisory Committee.
Course coordinator and faculty supervisor for graduate assistants, MATH 191.
Member, doctoral comprehensive examination committee, mathematics.
Member, master's examination committee, mathematics.

E. A. Walker

Member, American Mathematical Society.
Member, American Statistical Association.
Member, Mathematical Association of America.
Member, Biometric Society.
Member, Sigma Xi.
Member, Phi Kappa Phi.
Reviewer, Mathematical Reviews.
Referee, American Mathematical Monthly.
Coeditor, Abelian Group Theory (Oberwolfach), Lecture Notes in Math. 874, pp. 477. Springer-Verlag, Berlin, Heidelberg and New York, 1981.
Member, Board of Editors, Communications in Algebra.
Referee, National Science Foundation research proposals.
Consultant, National Surgical Adjuvant Project for Breast and Bowel Cancers, Pittsburgh, Pa.
Co-organizer, Conference on Abelian Group Theory, Mathematisches Forschungsinstitut, Oberwolfach, West Germany.
Member, Industry Alliance Task Force.
Outside evaluator, Promotion to full professor, three evaluations for two universities.
Chairman, Graduate Council, spring; member, fall.
Chairman, College of Arts and Sciences Research Affairs Committee, fall; member, spring.

Member, College of Arts and Sciences College Council, fall.
Member, Department of Foreign Languages Promotion and Tenure
Committee.
Member, Department of Mathematical Sciences Graduate
Committee.
Member, Department of Mathematical Sciences Committee for
Written Comprehensive Examinations.
Chairman, doctoral committee: A. Giovannitti.
Member, doctoral comprehensive examination committee,
mathematics.
Member, doctoral committees: educational specialties, one;
counseling and educational psychology, one.
Chairman, master's examination committees: mathematics, one;
member, two.
Course coordinator, STAT 251.

F. D. Williams

Member, American Mathematical Society.
Member, Phi Beta Kappa.
Member, Pi Mu Epsilon.
Member, Association of Members of the Institute for Advanced
Study.
Member, College of Arts and Sciences Faculty Affairs
Committee.
Member, Mathematics/Engineering Committee.
Member, Department of Mathematical Sciences Ad Hoc
Mathematics Education Committee.
Member, Department of Mathematical Sciences Graduate
Committee.
Member, Department of Mathematical Sciences Committee for
Written Comprehensive Examinations.
Member, doctoral final oral examination committee,
mathematics.
Adviser and member of Alumni Board, Sigma Alpha Epsilon.
Course coordinator, MATH 292.
Crimson Scholar Adviser, spring.

R. J. Wisner

Associate member, Institute for Advanced Study.
Member, National Council of Teachers of Mathematics.
Member, Program Planning Committee, National Council of
Teachers of Mathematics Regional Meeting, El Paso, Tex.
Member, Editorial Board, 1984 Yearbook, Technology and the
Mathematics Curriculum, National Council of Teachers of
Mathematics.
Member, Program Committee, Mathematical Association of
America, Southwestern Section.
Member, Greater El Paso Council of Teachers of Mathematics.
Consulting editor, Brooks/Cole Publishing Co.
Referee, Scott, Foresman & Co.

Referee, D. Van Nostrand Co.
Author, Some Aspects of Problem Solving in Elementary Mathematics, pp. 16. Glenview, Ill.: Scott, Foresman & Co, 1981.
Consultant, New Mexico Department of Education Meeting on Mathematics Textbook Adoptions, Albuquerque, N. Mex.
Presenter, with H. Daw and G. Rogers, "Alternative models for enrollment projection," Faculty Senate Retreat, Las Cruces, N. Mex.
Member, Committee on College Teaching.
Member, Faculty Senate Ad Hoc Committee on Growth.
Member, Department of Mathematical Sciences Ad Hoc Mathematics Education Committee.
Speaker, "The NMSU Mathematics Program," American Indian Student Orientation Program; Introduction to Engineering for Minority Students, New Mexico State University, Las Cruces, N. Mex.
Speaker, each of five days, Workshop for Teachers, Ysleta Independent School District, Eastwood High School El Paso, Tex.; one day, El Paso Independent School District, El Paso High School, El Paso, Tex.
Speaker, five demonstration classes, Riverside Junior High School, El Paso, Tex.

J. D. Zund

Member, American Physical Society.
Member, Unione Matematica Italiana.
Member, London Mathematical Society.
Member, Tensor Society.
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 Review.
Reviewer, Zentralblatt für Mathematik.
Advisor to University Library on purchasing Russian scientific and technical books.
Member, Department of Mathematical Sciences Promotion to Associate Professor and Tenure Committee.
Course coordinator, MATH 291, 392.

B. PROFESSIONAL MEETINGS ATTENDED

U. F. Albrecht

Conference on Abelian Group Theory, Mathematisches Forschungsinstitut, Oberwolfach, West Germany.

P. Antosik

Conference on Convergence Spaces, Szczyrk, Poland.

R. J. Bagby

Mathematical Association of America, Southwestern Section
Meeting, Las Cruces, N. Mex.
Italian-American Conference on Harmonic Analysis,
Minneapolis, Minn.

D. L. Beers

Conference on Abelian Group Theory, Mathematisches
Forschungsinstitut, Oberwolfach, West Germany.

K. K. Berver

Mathematical Association of America, Southwestern Section
Meeting, Las Cruces, N. Mex.
FOCUS on YOU & What's New in 82 in Academic Support
Programs, New Mexico Western College Reading Association
and Center for Learning Assistance, New Mexico State
University, Las Cruces, N. Mex.

M. F. Combs

National Council of Teachers of Mathematics Regional
Meeting, El Paso, Tex.

C. E. Evans

National Council of Teachers of Mathematics Regional
Meeting, El Paso, Tex.
Mathematical Association of America, Southwestern Section
Meeting, Las Cruces, N. Mex.
Conference on Mathematics Education, New Mexico State
University, Las Cruces, N. Mex.

T. G. Faticoni

Ring Theory Conference, State University of New York,
Plattsburg, N. Y.

E. D. Gaughan

Conference on the Advancement of Mathematics Teaching,
Austin, Tex.
Mathematics Association of America, Southwestern Section
Meeting, Las Cruces, N. Mex.
National Council of Teachers of Mathematics Regional
Meeting, El Paso, Tex.
Greater El Paso Council of Teachers of Mathematics, two semi-
annual meetings, El Paso, Tex.

A. J. Giovannitti

Conference on Abelian Group Theory, Mathematisches
Forschungsinstitut, Oberwolfach, West Germany.

R. H. Hunter

Conference on Abelian Group Theory, Mathematisches
Forschungsinstitut, Oberwolfach, West Germany.
Association for Computing Machinery, Symposium on Text
Manipulation, Portland, Oreg.
National Educational Computing Conference, North Texas State
University, Denton, Tex.
Conference on Mathematics Education, Las Cruces, N. Mex.
National Council of Teachers of Mathematics Regional Meeting,
El Paso, Tex.
CAUSE (Comprehensive Assistance for Undergraduate Science
Education) Advisory Group Meeting, Denton, Tex.

D. G. Johnson

New Mexico Math-Science Teachers Conference, Las Cruces,
N. Mex.
New Mexico Association for Supervision and Curriculum
Development, Las Cruces, N. Mex.
Mathematical Association of America, Southwestern Section
Meeting, Las Cruces, N. Mex.
Remedial & Developmental Mathematics in College: Issues and
Innovations, City University of New York, N.Y.
Quality Education in New Mexico, New Mexico State Board of
Education and Board of Educational Finance, Las Cruces,
N. Mex.
National Council of Teachers of Mathematics Regional Meeting,
El Paso, Tex.
FOCUS on YOU & What's New in 82 in Academic Support Programs,
New Mexico Western College Reading Association and Center
for Learning Assistance, New Mexico State University, Las
Cruces, N. Mex.

W. H. Julian

American Mathematical Society Annual Meeting, San Francisco.
Mathematical Association of America Southwestern Section
Meeting, Las Cruces, N. Mex.
Texas Association for Supervision and Curriculum Development
Meeting, El Paso, Tex.

J. E. Kist

Mathematical Association of America, Southwestern Section
Meeting, Las Cruces, N. Mex.

R. A. Knoebel

Mathematical Association of America, Southwestern Section
Meeting, Las Cruces, N. Mex.
Microcomputer Conference, University of Oklahoma, Norman,
Okla.
Association for Computing Machinery, Symposium on Symbolic
and Algebraic Computation, Snowbird, Utah.

W. M. Krueger

American Mathematical Society Annual Meeting, San Francisco.
Conference on Mathematics Education, Las Cruces, N. Mex.

D. S. Kurtz

American Mathematical Society Annual Meeting, San Francisco.
Conference on Harmonic Analysis, University of Chicago,
Chicago, Ill.

B. MacKichan

National Educational Computing Conference Annual Meeting,
North Texas State University, Denton, Tex.

R. J. Y. McLeod

Numerical Analysis Conference, Dundee, Scotland.
Seventh South African Symposium on Numerical Mathematics,
Durban, South Africa.
Association for Computing Machinery, Rio Grande Chapter,
Los Alamos, N. Mex.

R. Mines

Conference on Abelian Group Theory, Mathematisches
Forschungsinstitut, Oberwolfach, West Germany.
L. E. J. Brouwer Centenary, Koninklijke Academie van
Wetenschappen and Nederlands Wiskundig Genootschap,
Noordwijkerhout, Netherlands.
Bavarian Algebra Group, University of Munich, Munich, West
Germany.

S. A. Nett

American Mathematical Society Annual Meeting, San Francisco.
Mathematical Association of America, Southwestern Section
Meeting, Las Cruces, N. Mex.

H. T. Nguyen

Institute of Mathematical Statistics, special topics meeting
on survival analysis, Ohio State University, Columbus,
Ohio.
Twentieth Institute for Electrical and Electronic Engineers
Conference on Decision and Control, San Diego, Calif.

K. L. Phillips

American Mathematical Society Annual Meeting, San Francisco.
American Mathematical Society Regional Meeting, Pittsburgh.
Mathematical Association of America, Southwestern Section
Meeting, Las Cruces, N. Mex.

F. Richman

Conference on Abelian Group Theory, Mathematisches
Forschungsinstitut, Oberwolfach, West Germany.

L. E. J. Brouwer Centenary Conference, Koninklijke Academie
van Wetenschappen and Nederlands Wiskundig Genootschap,
Noordwijkerhout, Netherlands.

G. S. Rogers

Governors' Meeting, Mathematical Association of America,
San Francisco.

Mathematical Association of America, Southwestern Section
Meeting, Las Cruces, N. Mex.

C. C. Sherman

American Mathematical Society Annual Meeting, San Francisco.
Algebraic Topology Conference, University of Western Ontario,
London, Ontario, Canada.

C. W. Swartz

American Mathematical Society Annual Meeting, San Francisco.
Mathematical Association of America, Southwestern Section
Meeting, Las Cruces, N. Mex.

NSF Chautauqua Short Course on Numerical Solution of
Nonlinear Equations and Optimization Problems,
Albuquerque, N. Mex.

I. E. Vance

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

National Council of Teachers of Mathematics Regional Meeting,
Long Beach, Calif.

National Council of Teachers of Mathematics Annual Meeting,
St. Louis, Mo.

National Council of Supervisors of Mathematics Annual
Meeting, St. Louis, Mo.

Conference on Mathematics Education, Las Cruces, N. Mex.

C. L. Walker

Conference on Abelian Group Theory, Mathematisches
Forschungsinstitut, Oberwolfach, West Germany.

Mathematical Association of America, Southwestern Section
Meeting, Las Cruces, N. Mex.

E. A. Walker

Teaching Improvement Conference, New Mexico State University,
Las Cruces, N. Mex.

Conference on Abelian Group Theory, Mathematisches
Forschungsinstitut, Oberwolfach, West Germany.

American Statistical Association Annual Meeting, Albuquerque
Chapter, Santa Fe, N. Mex.

Mathematical Association of America, Southwestern Section Meeting, Las Cruces, N. Mex.
Baylor University Fifth International Time Series Meeting, Houston, Tex.
American Statistical Association and the Biometric Society Annual Meeting, Detroit, Mich.
American Mathematical Society and Mathematical Association of America Regional Meeting, Pittsburgh, Pa.
American Mathematical Society, Maxwell Symposium, special session on clusters analysis, Amherst, Mass.
Thirty-seventh Annual Conference on Applied Statistics, Newark, N. J.

F. D. Williams

American Mathematical Society Annual Meeting, San Francisco.

R. J. Wisner

American Mathematical Society Annual Meeting, San Francisco.
Texas State Meeting on Fundamentals of Mathematics, University of Houston at Victoria, Victoria, Tex.
Rio Grande Valley Council of Teachers of Mathematics, Edinburg, Tex.
Mathematical Association of America, Southwestern Section Meeting, Las Cruces, N. Mex.
National Council of Teachers of Mathematics Annual Meeting, St. Louis, Mo.
Authors' Conference, Scott, Foresman & Co., Chicago.
Meeting of Editors, 1984 Yearbook Committee, National Council of Teachers of Mathematics, Northridge, Calif.
Teachers and Supervisors Conference, Rockford, Ill.
Teachers and Supervisors Conference, Elmhurst, Ill.
National Council of Teachers of Mathematics Regional Meeting, El Paso, Tex.
Conference for the Advancement of Mathematics Teaching, Austin, Tex.
California Mathematics Council, Southern Section Meeting, Long Beach, Calif.

J. D. Zund

National Council for Teachers of Mathematics Regional Meeting, El Paso, Tex.

II. SCHOLARSHIP

Jearl R. Lindley, \$250 1

III. COLLOQUIUM SPEAKERS

- Patricia Hanson, University of Toronto, "Relating the user's error request to the magnitude of the defect in existing variable order Adam's codes."
- Howard Hiller, Yale University, "Combinatorics and intersections of Schubert varieties."
- Hung T. Nguyen, University of Massachusetts, "Nonparametric recursive estimation in dependent observations."
- Ying Chiu So, University of North Carolina, Chapel Hill, "Repeated significance tests based on likelihood ratio statistics."
- Douglas S. Kurtz, Purdue University, "Weighted weak-type estimates for the Hardy-Littlewood maximal function."
- Susan C. Geller, Radcliffe College and Harvard University, and Purdue University, "Excision in algebraic K-theory."
- D. G. Kabe, New Mexico State University and Saint Mary's University, Halifax, "On the unit group of the units of hypercomplex quadratic forms."
- Francis D. Williams, New Mexico State University, "Topology."
- Ray Mines, New Mexico State University, "Completions of valuated Abelian groups."
- Alistair Watson, University of Dundee, Scotland, "Globally convergent methods for semi-infinite programming problems."
- William H. Julian, New Mexico State University, "Picard's theorem."
- Theodore G. Faticoni, New Mexico State University, "On relative projectivity."
- Hari Iyer, Colorado State University, "Optimal and restricted designs for multivariate stationary time series experiments."
- R. Arthur Knoebel, New Mexico State University, "The role of finite simple groups in universal algebra."
- David M. Arnold, New Mexico State University, "Applications of finite rank torsion free Abelian group theory to algebraic topology and complex tori."
- Kazimierz Glazek, University of Wroclaw, "Weak automorphisms of general algebras."
- Keith L. Phillips, New Mexico State University, "Distributions on zero dimensional groups and fields."
- Ken Knowlton, Distinguished Visiting Professor in Computer Science, New Mexico State University, "Numerical methods for simulation."
- Peter John, University of Texas at Austin, "Incomplete block experiments for the 2×3 factorial."
- Barry Gardner, University of Tasmania, "Radicals, varieties and torsion."

IV. 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, New Mexico State University	\$113,562 113,562	\$ 55,580 55,580
D. S. Kurtz; National Science Foundation		33,534
R. J. Y. McLeod; National Aeronautics and Space Administration	7,074	
R. J. Y. McLeod; National Science Foundation		85,000
M. Mandelkern; National Science Foundation		27,151
C. C. Sherman; National Science Foundation	18,282	
E. A. Walker, D. M. Arnold, R. H. Hunter, F. Richman; National Science Foundation	56,000	51,000
R. J. Wisner, P. L. Hosford; proposal for sponsoring mathematics education fellows, submitted to consortium of 22 foundations.		592,611

V. RESEARCH PAPERS PUBLISHED

- Arnold, D. M., Pure subgroups of finite rank completely decomposable groups, Abelian Group Theory, Lecture Notes in Math. 874 (1981), 1-31, Springer-Verlag, Berlin, Heidelberg and New York.
- Arnold, D. M., J. Reid, R. Pierce, W. Wickless and C. Vinsonhaler, Torsion free abelian groups of finite rank projective as modules over their endomorphism rings, J. Algebra 71 (1981), 1-10.
- Bagby, R. J., Strengthened maximal functions and pointwise convergence in \mathbb{R} , Rocky Mountain J. Math. 11 (2), (1981), 243-260.
- Gaughan, E. D. and R. J. Wisner, A measured metric statement, The Mathematics Teacher 74 (4), (1981), 262-265.
- Hunter, R. H., B. MacKichan and J. M. Adams, Starting a computer-based learning project, Proc. Third National Educational Computing Conference, (1981), 320-323.
- Hunter, R. H. and F. Richman, Global Warfield groups, Trans. Amer. Math. Soc. 266 (1981), 555-572.
- Hunter, R. H. and E. A. Walker, S-groups revisited, Proc. Amer. Math. Soc. 82 (1981), 13-18.
- Hunter, R. H. and E. A. Walker, Valuated p-groups, Abelian Group Theory, Lecture Notes in Math. 874 (1981), 350-373.
- Julian, W. H., D. Bridges, A. Calder, R. Mines and F. Richman, Compactly generated Banach spaces, Arch. Math. (Basel) 36 (1981), 239-243.

- Julian, W. H., D. Bridges, A. Calder, R. Mines and F. Richman, Locating Metric Complements in Euclidean Space, Constructive Mathematics, Lecture Notes in Math. 873 (1981), 241-249, Springer-Verlag, Berlin, Heidelberg and New York.
- Julian, W. H., D. Bridges, C. Calder, R. Mines and F. Richman, ϵ -covering dimension. Pacific J. Math. 96 (1981), 257-262.
- Knoebel, R. A., Exponentials reiterated, Amer. Math. Monthly 88 (4), (1981), 235-252.
- Kurtz, D. S. and R. L. Wheeden, A note on singular integrals with weights, Proc. Amer. Math. Soc. 81 (1981), 391-397.
- MacKichan, B., cf. Hunter, R. H.
- Mandelkern, M., Resolutions on the line, Pacific J. Math. 88 (1980), 91-100.
- Mandelkern, M., Located sets on the line, Pacific J. Math. 95 (1981), 401-409.
- Mines, R., Cotorsion modules over Noetherian hereditary rings, Abelian Group Theory, Lecture Notes in Math. 874 (1981), 242-250, Springer-Verlag, Berlin, Heidelberg and New York.
- Mines, R., cf. Julian, W. H., two papers.
- Mines, R. and A. Mader, Functorial topologies with totally ordered neighborhood bases, Arch. Math. (Basel) 34 (1980), 272-275.
- Mines, R. and F. Richman, Dedekind domains, Constructive Mathematics, Lecture Notes in Math. 873 (1981), 16-30, Springer-Verlag, Berlin, Heidelberg and New York.
- Nguyen, H. T., Asymptotic normality of recursive density estimation in Markov processes. Publ. Inst. Statist. Univ. Paris XXVI (1), (1981), 73-93.
- Nguyen, H. T., Estimation non paramétrique du coefficient de dérive par trois méthodes différents, LAAS No. 81 I 03 (1981), Toulouse.
- Nguyen, H. T. and G. Banon, Recursive estimation in diffusion model, SIAM J. Control Optim. 19 (5), (1981), 676-685.
- Nguyen, H. T. and T. Pham, Nonparametric estimation in diffusion model by discrete sampling, Publ. Inst. Statist. Univ. Paris XXVI (2), (1981), 89-109.
- Phillips, K. L., On certain trigonometric polynomials, White Sands Missile Range Internal Report, Spring, 1981.
- Phillips, K. L., The rotation degree of vector fields—applications to maximal edge detection in pattern recognition techniques, Research Report, White Sands Missile Range, November, 1981.
- Richman, F., Mixed local groups, Abelian Group Theory, Lecture Notes in Math. 874 (1981), 374-404, Springer-Verlag, Berlin, Heidelberg and New York.
- Richman, F., Seidenberg's condition P, Constructive Mathematics, Lecture Notes in Math. 873 (1981), 1-11, Springer-Verlag, Berlin, Heidelberg and New York.
- Richman, F., cf. Hunter, R. H.
- Richman, F., cf. Julian, W. H., three papers.

- Richman, F., cf. Mines, R.
Richman, F. and E. A. Walker, Cyclic Ext, Rocky Mountain J. Math. 11 (1981), 611-615.
Rogers, G. S., and N. S. Urquhart, Testability of linear hypotheses in normal linear models, Proceedings of the Twenty-sixth Conference on the Design of Experiments in Army Research Development and Testing, U.S. Department of Defense, ARO Report 81-2, 327-334.
Sherman, C. C., Cartan maps, and unique factorization, J. Alg. 70 (1), (1981), 102-115.
Sherman, C. C., K-theory of Noetherian schemes, Algebraic K-Theory, Lecture Notes in Math. 854 (1981), 343-371, Springer-Verlag, Berlin, Heidelberg and New York.
Swartz, C. W., A control problem of Rogak and Scott-Thomas, J. Math. Anal. Appl. 79 (1981), 218-223.
Swartz, C. W., Integrability for the Dobrakov integral, Czechoslovak Math. J. 30 (1980), 640-646.
Swartz, C. W., Weak Fubini theorems for the Dobrakov integral, Czechoslovak Math. J. 30 (1980), 647-654.
Walker, E. A. cf. Hunter, R. H., two papers.
Walker, E. A. cf. Richman, F.
Williams, F. D. and A. Calder, Incompressibility of maps and the homotopy invariance of Cech cohomology, Pacific J. Math. 94 (1981), 13-20.
Wisner, R. J., cf. Gaughan, E. D.

VI. RESEARCH PAPERS PRESENTED

- Antosik, P., "On convergence spaces," Conference on Convergence Spaces, Szczyrk, Poland.
Antosik, P., "A matrix method and its applications," University of Arizona, Tucson, Ariz.
Arnold, D. M., "Applications of finite rank torsion free abelian group theory to algebraic topology and complex tori," New Mexico State University, Las Cruces, N. Mex.
Bagby, R. J., "Supply, demand, and rearrangements," Mathematical Association of America, Southwestern Section Meeting, Las Cruces, N. Mex.
Bagby, R. J., "Strengthened maximal function," Italian-American Conference on Harmonic Analysis, Minneapolis, Minn.
Berver, K. K. and D. G. Johnson, "How to (help students) study math," FOCUS on YOU & What's New in 82 in Academic Support Programs, Las Cruces, N. Mex.
Evans, C. E., "Conic sections and Dandelin spheres," National Council of Teachers of Mathematics Regional Meeting, El Paso, Tex.
Evans, C. E. and R. Loser, "Mathematics, music, 1/f noise," National Council of Teachers of Mathematics Regional Meeting, El Paso, Tex.

- Faticoni, T. G., "On relative projectivity," New Mexico State University, Las Cruces, N. Mex.
- Gaughan, E. D., "Flexagons for enrichment," Conference for the Advancement of Mathematics Teaching, Austin, Tex.
- Johnson, D. G., "A consumer reports," New Mexico Math-Science Teachers Conference, Las Cruces, N. Mex.
- Johnson, D. G., "Placement and remediation at New Mexico State," Mathematical Association of America, Southwestern Section Meeting, Las Cruces, N. Mex.
- Johnson, D. G., "A consumer reports", National Council of Teachers of Mathematics, Regional Meeting, El Paso, Tex.
- Johnson, D. G., cf. K. K. Berver.
- Julian, W. H., " ϵ -covering dimension," American Mathematical Society Annual Meeting, San Francisco.
- Julian, W. H., "Picard's theorem," New Mexico State University, Las Cruces, N. Mex.
- Knoebel, R. A., "The Role of finite simple groups in universal algebra," New Mexico State University, Las Cruces, N. Mex.
- Krueger, W. M., "What's new in Ext²?" Memorial University of Newfoundland, St. John's, Newfoundland, Canada.
- Kurtz, D. S., "The Hardy-Littlewood maximal function on $L(p,q)$ spaces with weights," American Mathematical Society Annual Meeting, San Francisco.
- Kurtz, D. S., "Weighted weak-type estimates for the Hardy-Littlewood maximal function", New Mexico State University, Las Cruces, N. Mex.; Texas A & M University, College Station, Tex.; University of Georgia, Athens, Ga.; University of Illinois, at Urbana-Champaign, Urbana, Ill.
- MacKichan, B., "Starting a computer-based learning project," National Educational Computing Conference Annual Meeting, North Texas State University, Denton, Tex.
- McLeod, R. J. Y., "Some applications of geometry in numerical analysis," Conference on Numerical Analysis, Dundee, Scotland.
- McLeod, R. J. Y. and J. M. Sanz-Serna, "A circularly exact predictor-corrector method for trajectory problems," Seventh South African Symposium on Numerical Mathematics, Durban, South Africa.
- McLeod, R. J. Y., "New approaches to curved finite elements," Seventh South African Symposium on Numerical Mathematics, Durban, South Africa.
- McLeod, R. J. Y., "The parametric cubic and simple parametric surface," Association for Computing Machinery, Rio Grande Chapter, Los Alamos, N. Mex.
- Mines, R., "Completions of valuated abelian groups," Conference on Abelian Group Theory, Mathematisches Forschungsinstitut, Oberwolfach, West Germany; New Mexico State University, Las Cruces, N. Mex.; University of Padova, Padova, Italy.

- Mines, R., "A survey of algebraic number theory," L. E. J. Brouwer Centenary Conference, Koninklijke Academie van Wetenschappen and Nederlands Wiskundig Genootschap, Noordwijkerhout, Netherlands.
- Mines, R., " ϵ -covering dimension," University of Hawaii, Honolulu, Hawaii; University of Padova, Padova, Italy; University of Wurzburg, Wurzburg, West Germany.
- Mines, R., "Completions of topological vector spaces," University of Freiburg, Freiburg, West Germany.
- Mines, R., "Completions of abelian groups," University of Erlangen, Erlangen, West Germany.
- Nett, S. A., "Singular perturbations of certain two point boundary value problems in Banach space," University of New Mexico, Albuquerque, N. Mex.
- Nguyen, H. T., "On optimization and possibility measures," invited paper, Twentieth Institute of Electrical and Electronic Engineers Conference on Decision and Control, San Diego, Calif.
- Nguyen, H. T., "Nonparametric recursive estimation in dependent observations," New Mexico State University, Las Cruces, N. Mex.
- Nguyen, H. T., "Large sample theory of least squares estimators," New Mexico State University, Las Cruces, N. Mex.
- Phillips, K. L., "The theory of distributions on zero dimensional groups and fields," American Mathematical Society Regional Meeting, Pittsburgh, Pa.; New Mexico State University, Las Cruces, N. Mex.
- Phillips, K. L., "Combinatorial scheduling," Colorado State University, Fort Collins, Colo.
- Phillips, K. L., "Rotation degree of vector fields and edge detection in pattern recognition," Texas Tech University, Lubbock, Tex.
- Richman, F., "Mixed local groups," Conference on Abelian Group Theory, Mathematisches Forschungsinstitut, Oberwolfach, West Germany.
- Richman, F., "Warfield groups," University of Essen, Essen, West Germany.
- Richman, F., "Global Azumaya theorems," University of Freiburg, Freiburg, West Germany.
- Richman, F., "Finite dimensional algebras over discrete fields," L. E. J. Brouwer Centenary Conference, Koninklijke Academie van Wetenschappen and Nederlands Wiskundig Genootschap, Noordwijkerhout, Netherlands.
- Sherman, C. C., "Higher K-theory of Dedekind rings," American Mathematical Society Annual Meeting, San Francisco.
- Sherman, C. C., "Algebraic K-theory and group representations," Algebraic Topology Conference, University of Western Ontario, London, Ontario, Canada.
- Thomas, J. D., "An anomalous Sturm-Liouville problem," University of Dundee, Dundee, Scotland.

- Thomas, J. D., "Combinatorics and asymptotics," University of Dundee, Dundee, Scotland.
- Thomas, J. D., "An optimization problem of Bellman," University of Dundee, Dundee, Scotland.
- Vance, I. E., "The 510N01 pyramids," National Council of Teachers of Mathematics Regional Meeting, Long Beach, Calif.
- Vance, I. E., "Unfractured fractions (a consistent approach to the basic operations on rationals in fractional form)," National Council of Teachers of Mathematics Annual Meeting, St. Louis, Mo.
- Walker, E. A., "Valuated p-groups," Conference on Abelian Group Theory, Mathematisches Forschungsinstitut, Oberwolfach, West Germany.
- Walker, E. A., "Estimation in sample survey randomization models," American Statistical Association Annual Meeting, Albuquerque Chapter, Santa Fe, N. Mex.
- Walker, E. A., "Estimation in sample survey randomization models," University of Texas, El Paso, Tex.
- Walker, E. A., "Some models in survival analysis and competing risks," New Mexico State University, Las Cruces, N. Mex.
- Williams, F. D., "Homotopy invariance, etc.," invited address, special session on algebraic topology, American Mathematical Society Annual Meeting, San Francisco.
- Williams, F. D., "Topology," New Mexico State University, Las Cruces, N. Mex.
- Wisner, R. J., "Teaching fractions," Texas State Meeting on Fundamentals of Mathematics, University of Houston at Victoria, Victoria, Tex.
- Wisner, R. J., "A nonintuitive arithmetic progression," Rio Grande Valley Council of Teachers of Mathematics, Edinburg, Tex.
- Wisner, R. J., "A coherent theory for divisibility rules," National Council of Teachers of Mathematics Annual Meeting, St. Louis, Mo.
- Wisner, R. J., "Problem Solving," Teachers and Supervisors Conference, Rockford, Ill.
- Wisner, R. J., "Problem Solving," Teachers and Supervisors Conference, Elmhurst, Ill.
- Wisner, R. J., "Persistent Patterns," Conference for the Advancement of Mathematics Teaching, Austin, Tex.
- Wisner, R. J., "Star-crossed problems," California Mathematics Council, Southern Section, Long Beach, Calif.
- Zund, J. D., "Euclid and his elements," three lectures, William E. Riley Lectures, National Council of Teachers of Mathematics Regional Meeting, El Paso, Tex.