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RÉSUMÉ

William A. Beyer

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Date of Birth: November 9, 1924
SSN: 210-12-2304
Marital Status: Married to Ann H. Beyer, two children

Formal Education

Ph.D. Mathematics major, physics minor, Pennsylvania State University, 1959
M.S. Physics major, mathematics minor, University of Illinois, 1950
B.S. Physics major, mathematics minor, Pennsylvania State College, 1949

Attended

Queen's University, Kingston, Ontario, Canada, 1953-54
University of Wisconsin Army Correspondence School, 1945

Dissertation

Besicovitch Dimension of Level Sets of Rademacher Series
Advisors: I. M. Sheffer, J. R. Kinney

Employment

Summer 1950: Research Assistant in Physics (acoustics), Pennsylvania State College
1951-53: Graduate Assistant in Mathematics, Pennsylvania State College
1954-55: Instructor in Mathematics, Pennsylvania State University
1955- 57: Mathematician, General Electric Jet Engine Department, Cincinnati
1957-59: Instructor in Mathematics, Pennsylvania State University
Summer 1959: Mathematician, Lincoln Laboratory, Mass. Inst. of Technology
1959-Present: Mathematician, Los Alamos National Laboratory, Theoretical Division.
1959-1993: Adjunct Professor of Mathematics, University of New Mexico at Los Alamos Graduate Center

Honors

Sigma Xi, Pi Mu Epsilon

Professional Societies

American Mathematical Society

Mathematical Association of American

London Mathematical Society

Canadian Mathematical Society

Professional Activities and Experience

1. Invited speaker: University of Missouri Mathematics Seminar, 1967; Applications of Number Theory Symposium, University of Montreal, 1971; University of New Mexico Mathematics Seminar, 1973; American Mathematical Society Session on Probability, 1976; 21st International Symposium on Functional Equations, Konolfingen, Switzerland, 1983; International Symposium on Iteration Theory and its Functional Equations, Lochau, Austria, 1984; 22nd International Symposium on Functional Equations, Gargnano, Italy, 1985; 24th International Symposium on Functional Equations, Mount Holyoke, 1986, Symposium on Random Number Generators, Lambrecht, Germany, 1989, International Symposium on Functional Equations, Wolfville, Nova Scotia, 1991, International Symposium on Iteration Theory, Opava, Czech Republic.
2. Member of executive committee: Southwest and Rocky Mountain Division, American Association for the Advancement of Science, 1980-1983. Chairman, Computer Sciences, Mathematics, and Statistics Section, 1983-1985, Secretary, 1985-1987.
3. Chairman, State of New Mexico Committee on Neonatal PKU Testing, 1981-1982.
4. Board Member, Los Alamos Committee on Arms Control and International Security, 1986-. In this capacity, he participated in studies of numerous arms control and reduction treaties and commented to Congress in support of these treaties.
5. Chairman, Research Committee on Mental Retardation, New Mexico Association for Retarded Citizens, 1978-80.
6. Taught courses in: calculus, differential equations, matrix theory, vector analysis, complex variables, real variables and measure theory, boundary value problems, MACSYMA computer language (1959-present).
7. Given lectures in: Theory of Distributions, Recursive Functions, Unbounded Operators, Generalized Harmonic Functions, Number Theory, Catastrophe Theory, Thermodynamics (1959-1978).
8. Reviewer for Mathematical Reviews and for Zentralblatt
9. Referee for various scientific journals.
10. Editorial Board, Ulam Quarterly

11. Chairman, Joint Los Alamos-University of New Mexico Distinguished Lecture Series
12. Participated in the following projects which are not reflected in the publication list:
 - a. Three dimensional gravitational hydrodynamics, (Computer models of formation of early stars), 1959-1961.
 - b. Consultant for N-Division on complex variable methods for evaluating heat transfer in fuel elements, 1960.
 - c. Performance of thermionic devices (computer work for N-Division), 1962.
 - d. Theory of inverse of sparse matrices, 1962.
 - e. Evaluation of cancer tissue slides by probability methods, 1962.
 - f. Mathematics of chemical diffusion in plastic spheres, 1963-1964.
 - g. Monte Carlo evaluation of multidimensional integrals, 1970.
 - h. Computer processing of electroencephalogram data, 1971-1973.
 - i. Numerical work on electron velocity distribution in lasers, 1973.
 - j. Economics in energy policy.
 - k. Statistical Analysis of AIDS epidemic data.
 - l. Judge in Native American Science Fairs, 1996 - 1999.

Military Experience

May 1944 - Aug. 1945:

U.S. Army Airforce, Maintenance of bombsight computers and automatic flight control devices on B-17 and B-29 bombers.

Aug. 1945-May 1946:

The Infantry School, Fort Benning.

May 1946-May 1947:

Platoon Leader; afterward Company Commander, Company L, 57th Infantry Regiment, Philippine Scouts.

Fall 1950:

Platoon Leader, 104th Division, Fort Campbell, Kentucky

Publications

1. *The Contribution of Twist to the Flexural Frequency for Twisted Blades*, with W. R. Spickerman, General Electric Technical Information Series, R57AGT11 (1956).
2. *Hausdorff Dimension of Level Sets of Some Rademacher Series*, Pacific Journal of Mathematics, 12, 35-46 (1962).
3. *Cardinality of Level Sets of Rademacher Series whose Coefficients Form a Geometric Progression*, Proceedings American Mathematical Society, 13, 579-584 (1962).
4. *Regula-Falsi for Two Variables*, abstract, Notices American Mathematical Society 9, 476-477, 1962.
5. *The Fourier Transform of $(x^2 + a^2)^{-1}(x^2 + b^2)^{-1}$* , Los Alamos Scientific Laboratory Report LAMS-2975, U.S. Department of Commerce (1963).
6. *An Elastic-Plastic Cylinder with Free Ends and Internal Heat Generation*, Nuclear Science and Engineering, 17, 179-184 (1963).
7. *Uniqueness of Weighted Code Representations II*, Institute of Electrical and Electronic Engineers, Transactions on Electronic Computers, 12, 137 (1964).
8. *Uniqueness of Weighted Code Representations III*, Institute of Electrical and Electronic Engineers, Transactions on Electronic Computers, 13, 153 (1964).
9. *A Note on Starting the Newton-Raphson Method*, Communications of the Association for Computing Machinery, 7, 422 (1964).
10. *Processing of Plutonium by Ion Exchange VIII, Self-diffusion studies in anion exchange resin*, with D. B. James, Los Alamos Scientific Laboratory Report LA-3534, U.S. Department of Commerce (1966).
11. *The Pseudo-Sparseness of the Inverse Sequence of a Sparse Matrix Sequence*, abstract, Notices of the American Mathematical Society, 11, 342 (1966).
12. *Independence of the Performance of an Ion-Exchange Column of its Shape*, with D. B. James, Industrial and Engineering Chemistry Fundamentals, 5, 433 (1966); 6, 159-160 (1967).
13. *Evaluation of Transient Temperature Distribution in a Dielectric in an Alternating Field*, Proceedings of the Institute of Electric Engineers (Great Britain), 113, 264-268 (1966).
14. *Asymptotic Phase and Amplitude for a Modified Coulomb Potential in Scattering Theory: An Application of Invariant Imbedding*, Journal of Mathematical Analysis and Applications, 13, 348-360 (1966).
15. *Algorithms and Random Sequences*, translation of lectures by Per Martin-L, LA-TR-67-105, Los Alamos Scientific Laboratory (1967).

16. *The Visual Hull of a Polyhedron*, Proceedings of the Conference on Projections and Related Topics, Clemson University (1967).
17. *Analytic Continuation of Laplace Transforms by Means of Asymptotic Series*, with L. Heller, Journal of Mathematical Physics, 8, 1004-1018 (1967).
18. *Note on the Visual Hull of a Set*, Journal of Combinatorial Theory, 4, 240- 245 (1968).
19. *Inner Product-Magnitude-Preserving Transformations in Hilbert Spaces*, Compositio Mathematica, 21, 137-142 (1969).
20. *Clusters on a Thin Quadratic Lattice (Transfer Matrix Technique)*, with E. H. Lieb, Studies in Applied Mathematics 48, 77-90 (1969).
21. *Cantor-type Interval Dissections as Random Number Tests*, Los Alamos Scientific Laboratory report LA-4266, U.S. Department of Commerce (1969).
22. *Cluster number distributions on the simple quadratic lattice (A Monte Carlo calculation)*, with R. G. Schrandt, Los Alamos Scientific Laboratory report LA- 4055, U.S. Department of Commerce (1969).
23. *Computer studies of some history-dependent random processes*, with R. G. Schrandt and S. M. Ulam, Los Alamos Scientific Laboratory report LA-4246, Reprinted in "Analogies Between Analogies, The Mathematical Reports of S.M. Ulam and his Los Alamos Collaborators,". University of California Press, 1990, pp. 399-414.
24. *37 Reviews in Zentralblatt fur Mathematik in the fields of Approximation Theory, Integral Transforms, Measure Theory, Numerical Analysis, and Classical Analysis* (1968).
25. *Square Roots of Integers 2 and 15 in Various Bases 2 to 10*, with N. Metropolis and J. Neergaard, Mathematics of Computation, 23, 679 (1969).
26. *Solution to a Mathematical Model of Cell Growth, Division, and Death*, Mathematical Biosciences, 6, 431-436 (1970).
27. *Statistical Study of Digits of Some Square Roots of Integers in Various Bases*, with N. Metropolis and J. R. Neergaard, Mathematics of Computation, 24, 455- 473 (1970).
28. *The Generalized Serial Test Applied to Expansion of Some Irrational Square Roots in Various Bases*, with N. Metropolis and J. R. Neergaard, Mathematics of Computation, 24, 745-747 (1970).
29. *The Lattice Structure of Multiplicative Congruential Pseudo-Random Vectors*, with R. B. Roof and D. Williamson, Mathematics of Computation, 25, 345-363 (1971).
30. *The Notion of Complexity*, with M. L. Stein and S. M. Ulam, Los Alamos Scientific Laboratory report LA-4822, Reprinted in "Analogies Between Analogies, The Mathematical Reports of S.M. Ulam and his Los Alamos Collaborators," University of California Press, 1990, pp. 445-463.

31. *BIOTA2: a Program for Monte Carlo Simulation of Population Interactions in a Biome*, with D. R. Harris, Los Alamos Scientific Laboratory report LA- 4865, 1972.
32. *Lower Bound for the Connective Constant of a Self-Avoiding Walk on a Square Lattice*, with M. B. Wells, Journal of Combinatorial Theory, 13, 76- 181 (1972).
33. *Ergodic Computations with Continued Fractions and Jacobi's Algorithm*, with M. S. Waterman, Numerische Mathematik, 19, 195-205.(1972); also 20, 430 (1973).
34. *Lattice Structure and Reduced Bases of Random Vectors Generated by Linear Recurrences*, in Applications of Number Theory to Numerical Analysis, S. K. Zaremba, Ed., Academic Press, 361-370 (1972).
35. *Metrics in Biology, an Introduction*, with T. F. Smith, M. L. Stein and S. M. Ulam, Los Alamos Scientific Laboratory report LA-4973, Reprinted (with some misprints)in "Analogies Between Analogies, The Mathematical Reports of S.M. Ulam and his Los Alamos Collaborators," University of California Press, 1990, pp. 465-475.
36. *On the Construction of Tetrahedra with Given Edge Lengths*, with C. J. Everett, Los Alamos Scientific Laboratory report LA-5029 (1972).
37. *Efficient Illumination of a Sphere*, with R. J. Ryan and F. T. Adler, Los Alamos Scientific Laboratory report LA-5318 (1973).
38. *Error Analysis of a Computation of Euler's Constant*, with M. S. Waterman, Mathematics of Computation, 28, 599-604 (1974).
39. *A Molecular Sequence Metric and Evolutionary Trees*, with T. F. Smith, M. L. Stein, and S. M. Ulam, Mathematical Biosciences, 19, 9-25 (1974).
40. *Generalized Pythagorean Theorem*, with D. R. Conant, Amer. Mathematical Monthly, 81, 262-265 (1974).
41. Editor (with J. Mycielski and G.-C. Rota) of the book: *Stanislaw Ulam: Sets, Numbers, and Universes - Selected Works*, MIT Press (1974).
42. *Decimals and Partial Quotients of Euler's Constant and $\log 2$* , with M. S. Waterman, Mathematics of Computation, 28, 667; also 32, 317-318, (1978).
43. *Rocky Mountain Energy 1974: Flows, Employment, Prices*, with R. J. Barrett and C. Kolstad, Los Alamos Scientific Laboratory report LA-6122-MS, (1975).
44. *Some Biological Sequence Metrics*, with T. F. Smith and M. S. Waterman, Advances in Mathematics, 20, 367-387 (1976).
45. *Nonstandard Analysis: An Introduction*, with N. Metropolis, Los Alamos Scientific Laboratory report LA-6972-MS (July 1977).
46. *A Conditioned Random Walk With Applications*, with M. S. Waterman, Los Alamos Scientific Laboratory report LA-6990-MS, 1978.

47. *Estimating Population Sizes in a Mixture of Two Radioactive Populations*, with C. L. Qualls, Los Alamos Scientific Laboratory report LA-7197 (1978).
48. *Symmetries of Conditioned Random Walk*, with M. S. Waterman, *Mathematics Magazine*, 50, 42-45 (1979).
49. *Additive Evolutionary Trees*, with M. S. Waterman, T. F. Smith, and M. Singh, *Journal of Theoretical Biology*, 64, 199-213 (1977).
50. *The Asymptotic Form of Partition Functions of Linear Chain Molecules: An Application of Renewal Theory*, with C. DeLisi, *Journal of Mathematical Analysis and Applications*, 57, 416-428 (1977).
51. *A Stochastic Model of the Isle Royale Biome*, with D. R. Harris and R. J. Ryan, *Rocky Mountain Journal of Mathematics*, 9, 3-18 (1979).
52. *Moments of Absorption Time for a Conditioned Random Walk*, with M. S. Waterman, *Studies in Applied Mathematics*, 60, 83-90 (1979).
53. *Optimization of Natural Gas Production by Water-flooding*, with Lisa A. Mantini, *Applied Mathematics and Optimization*, 5, 101-116 (1979).
54. *Polynomials for the Moments of Absorption Time in the Conditioned Symmetric Classical Ruin Problem*, *Journal of Combinatorics, Information and System Sciences*, 4, 32-38 (1979).
55. *Remainders of Power Series*, with J. D. McCall and G. H. Fricke, *International Journal of Mathematics and Mathematical Sciences*, 2, 239-250 (1979).
56. *Lie-Group Theory for Symbolic Integration of First-order Ordinary Differential Equations*, *Proceedings of the 1979 MACSYMA Users Conference*, MIT Laboratory for Computer Science, 362-384 (1979).
57. Book review: *Mathematical Work of Charles Babbage*, J. M. Dubbey, *American Mathematical Monthly*, 86, 66 (1979).
58. *Analysis of a Nonlinear Integral Equation Arising in the Study of the Magnetic Field in the Critical State Model of Superconductivity*, with G. M. Wing and A. Migliori, *Journal of Mathematical Physics*, 22 (4), pp. 908- 913, April 1981.
- 59 *Letter to the Editor on Biological Sequences*, *Science*, Vol 218, page 108, 1982
60. Book review: *Dictionnaire des Mathematiques by A. Bouvier*, M. George, and F. Le Lionnais, *American Mathematical Monthly*, 88, 186 (1981).
61. Comment on “*The General Critical State Model in Two Dimensions and Zero Applied Field: A Uniqueness Theorem and Some Consequences*”, with G. M. Wing and A. Migliori, *Journal of Applied Physics*, 52 4333 (1981).

62. Seven commentaries in *The Scottish Book: Mathematics from the Scottish Cafe*, edited by R. Daniel Mauldin, Birkhauser-Boston (1981).
63. *Period Doubling for Trapezoid Function Iteration: Metric Theory*, with P. R. Stein, *Advances in Applied Mathematics*, 3, 1-17 (1982).
64. Book review: *Iterated Maps on the Interval as Dynamical Systems*, by P. Collet and J.-P. Eckmann, Birkhauser, *Advances in Applied Mathematics*, 3, 262-264 (1982).
65. *Further Results on Periods and Period Doubling for Iterates of the Trapezoid Function*, with P. R. Stein, *Advances in Applied Mathematics*, 3, 265-287 (1982).
66. *Brief History of Functional Iteration at Los Alamos*, Los Alamos National Laboratory report LA-9705-H, 1983 (with P. R. Stein).
67. *Eigenfunctions for Functional Equations*, *Aequationes Mathematicae*, 26 (1983), 264-265.
68. *Quantitative Comparison of DNA Sequences*, *Los Alamos Science*, No. 9, 1983, 62-63 (with C. Burks and W. B. Goad).
69. *Solution of Simultaneous Polynomial Equations by Elimination in MACSYMA*, Proceedings of the 1984 MACSYMA Users Conference, General Electric, 1984, 110-120.
70. *Shift-Maximal Sequences: Existence, Uniqueness and Multiplicity*, *Journal of Mathematical Analysis and Applications*, with R. D. Mauldin and P. R. Stein, 115, 305-362, 196.
71. *A Functional Equation for the Embedding of a Homeomorphism of the Interval into a Flow*, Proceedings of the International Symposium on Iteration Theory and Its Functional Equations, Lochau, Austria, with P. J. Channell, *Lecture Notes in Mathematics*, 1163, 7-13, 1986.
72. *Mathfile: Database and User's Guide*, Database, August 1985, 67-71.
73. *The Volume Common to Two Congruent Circular Cones Whose Axes Intercept Symmetrically*, with R. Fawcett, R. D. Mauldin, and B. Swartz, *J. of Symbolic Computation*, 4, 381-390, 1987.
74. *Stanislaw M. Ulam's Contributions to Mathematical Biology*, with P. H. Sellers and M. S. Waterman, **10**, *Letters on Mathematical Physics*, 231-242, 1985.
75. *A Steiner Tree Associated with Three Quarks*, with L. Heller, *J. of Symbolic Computation*, **3**, 283-289, 1987.
76. *Quadratic Convergence of Projections in Period Doubling for Trapezoidal Maps*, with B. R. Ebanks, *Utilitas Mathematica*, **31**, 107-116, 1987.
77. *Zeros of Racah Coefficients and the Pell Equation*, with J. D. Louck and P. R. Stein, in *Acta Applicandae Mathematicae*, **7**, 257-311, 1986.

78. *Symmetries of Some Hypergeometric Series: Implications for 3j- and 6j Coefficients*, with J. D. Louck, L. C. Biedenharn, and P. R. Stein, Proceedings of the XV International Colloquium on Group Theoretical Methods in Physics, Oct. 20-24, 1986, Drexel University, World Scientific Publishing Co. Singapore, 4528-434, 1987.
79. *Group Theoretic Basis of Some Identities for the General Hypergeometric Series*, with J. D. Louck and P. R. Stein, J. of Mathematical Physics, **28**, 497-508, 1987.
80. *Mathematical Research in the Soviet Union with Practical Applications*, with D. D. Holm, J. M. Hyman, B. Nichols, and P. R. Stein, LA-11335-MS, Los Alamos National Laboratory, 1988, Confidential.
81. *An Ulam Distance*, Los Alamos Science, **15**, 287, 1987.
82. *Treaty Study Project, Los Alamos Committee on Arms Control and International Security*, Hearings before the Committee on Foreign Relations, United States Senate, S. HRG. 100-522, with D. B. Thomson, E. A. Bemis, and L. E. Agnew, March 14-22, 1988, pages 284-292.
83. *Quadratic Convergence in Period Doubling for Trapezoid maps* (abstract) with B. R. Ebanks, Aequationes Mathematicae, *32*, 129; *Problem on the functional equation $\phi(x) = h(\phi(f(x)))$* , Ibid, 129- 130, 1987.
84. *Discrimination with Neutral Particle Beams and Protons*. with C. R. Qualls, LA-UR-87-3140, Los Alamos National Laboratory, 1987.
85. *Coarse-grained Discrimination in NPB-SDI*, with C. R. Qualls and B. Nichols, LA-UR 87-3943, Los Alamos National Laboratory, 1987.
86. *Weights for a Poisson Vector*, with C. R. Qualls, LA=UR 87- 3908, Los Alamos National Laboratory, 1987, Los Alamos National Laboratory, 1987.
87. *Discrimination with Neutral Particle Beams Using Multiple Detectors*, with C. R. Qualls and B. Nichols, LA-UR 88-3445, Los Alamos National Laboratory, 1988.
88. *Discrimination Algorithms & Cross-Correlation*, with C. R. Qualls and B. Nichols, in Discrimination Conference Proceedings, June 2 and 3, 1988, Air Force Weapons Laboratory, 1989.
89. *Discrimination with Neutral Particle beams in Presence of Errors an Uncertainties in Parameters and Use of Multiple Detectors*, with C. R. Qualls and B. Nichols, LA-CP 89-67, Los Alamos National Laboratory, 1989.
90. *Convergence Rates and Convergence Order Profiles for Sequences*, with E. B. Ebanks and C. R. Qualls, Acta Applicandae, Mathematicae, **20**, 267-284, 1990.
91. *Mathematics and Statistics of Discrimination Using Particle Beams with Multiple Detectors*, LA-UR-90-2298, Los Alamos National Laboratory, 1990.

92. *Neutral Particle Beam Discrimination by Energy Spectral Analysis (U)*, with B. Nichols and C. R. Qualls, LA-CP 90-139 (revised), Secret, Los Alamos National Laboratory, 1990.
93. *The Envelope of the Planes that Bisect a Tetrahedron*, with Blair Swartz, LA-UR-90-2491, Los Alamos National Laboratory, 1990.
94. *Halfway Points*, with Blair Swartz, SIAM J. Math. Anal., **23**, 1332-1341, 1992.
95. *The Volume Common to Two Congruent Circular Cylinders*, with L. R. Fawcett, L. P. Harten, and Blair Swartz, J. Symbolic Computation, **13**, 221-230, 1992
96. *Mathematics and Statistics of Discrimination with a Particle Beam and One Detector*, with J. H. Kim, B. Nichols, and C. Qualls, LA-UR 92-1709, Los Alamos National Laboratory, 1992.
97. *Bisectors of Triangles and Tetrahedra*, with Blair Swartz, American Mathematical Monthly, **100**, 626-640, 1993.
98. *Galois Groups for Polynomials Related to Quadratic Map Iterates*, with J. D. Louck, Ulam Quarterly, **2**, Number 3, 1-39, 1994.
99. *Number of Left-Product Coefficients in a Mendelian Stochastic Algebra*, with Lisa Holm, Ulam Quarterly, **3**, no. 2, 1-10, 1996.
100. *Corrigenda on a paper of Beyer, Roof, and Williamson, 1971*, with W. W. Wood, Mathematics of Computation, **65**, 445-446, 1996.
101. *A Generalization of a Curiosity that Feynman Remembered all his Life*, with J. D. Louck and D. Zeilberger, Mathematics Magazine, **69**, 43-44, 1996.
102. *On Polynomials Having All Roots on the Unit Circle*, with G. D. Baker and J. D. Louck, in preparation, 1996.
103. *A New Class of Random Number Generators Required for Advanced Computer Architectures*, with T. T. Warnock and W. W. Wood, LA-UR-96-1885 (Revision 1), Los Alamos National Laboratory, 1996.
104. *Transfinite Function Iteration and Surreal Numbers*, with J. D. Louck, Advances in Applied Mathematics **18** 333-350, 1997.
105. *Lattice Structure of Random Vectors Generated by Linear Recurrences* with W. W. Wood and T. T. Warnock, in preparation.
106. Appendix to “*Quadratic Convergence in Period Doubling to Chaos for Trapezoidal Maps*”, by Li Wang, Journal of Mathematical Analysis and Applications, bf 227, 1-24, 1998.
107. *Pseudo-Characteristic Functions for Polyhedra*, with Johndale Solem and Steven Judd, in preparation, 2000, to be submitted to American Mathematical Monthly.
108. *Ramanujan and the Probability of Nuclear War*, In preparation, 2000.

- 109 *Ham Sandwiches*, Letter to the Editor, *American Scientist*, vol. 88, p. 381, Sept.-Oct. 2000.
- 110 *The Computer and Mathematics*, Letter to the Editor, *Notices of the American Mathematical Society*, vol. 48, #11, p. 1302, Dec. 2000.

Unpublished Documents

(available from Los Alamos National Laboratory)

1. *Comment on the Ejection of Comets from the Solar System*, Los Alamos Scientific Laboratory, LA-DC-5730 (1963).
2. *Approximately Lorentz and p -adic Fields*, Los Alamos Scientific Laboratory, LA-DC-9486 (1964).
3. *What are Random Numbers?* invited address, abstract, Third Annual Conference on Pure and Applied Mathematics, Socorro, NM, Feb. 23, 1968.
4. *On Economic-Ecologic Input-Output Models*, with C. R. Qualls, Los Alamos Scientific Laboratory, LA-UR-75-1602 (1975).
5. *Uses of the Jacobian in Investigating Stability Limits of Growth-Type Models*, with P. F. Dubois, Los Alamos Scientific Laboratory, LA-UR-76-2036 (1979).
6. *Energy Use and Environmental Regulation*, with David Abby, report for Office of Technology Impacts, Assistant Secretary of the Environment, Department of Energy, Los Alamos Scientific Laboratory, LA-UR-79-2852 (1979).
7. *Universal Relations in Functional Iteration*, Invited Address, Abstract, National Bureau of Standards, Washington (1980).
8. *Functional Iteration on the Unit Interval: Recent Developments*, Abstract, Annual Meeting, American Mathematical Society, Las Cruces, May 1981, Los Alamos National Laboratory, LA-UR-81-0798.
9. *Discovery in Mathematics*, abstract, invited address, El Paso AAAS meeting, May 1982, Los Alamos National Laboratory, LA-UR-82-51 (1982).