REESE T. PROSSER: Professor of Mathematics

Dartmouth College   Hanover, NH 03755

BORN: May 18, 1927, Minneapolis, Minnesota.

EDUCATION:
A.B. , Harvard University, 1949
Ph.D., University of California, Berkeley. 1955

EXPERIENCE:
  1953-55: Numerical Analyst at Lawrence Radiation Laboratory, Berkeley, California
  1955-56: Research Instructor, Mathematics Department, Duke University
  1956-53: CLE Moore Instructor, M.I.T.
  1958-62: Staff Member, Analysis Group, Lincoln Laboratory
  1962-65: Group Leader, Analysis Group, Lincoln Laboratory
  1965-66: Project Manager, Lincoln Laboratory Radar Calibration Spheres
  1966-69: Associate Professor of Mathematics, Dartmouth College
  1967-69: Vice-Chairman of Mathematics Department, Acting Chairman, summer
  1969- : Professor of Mathematics, Dartmouth College
  1969-70: Director of Graduate Study, Dartmouth College
  1969-70: Chairman, Science Division
  1973 : Research Associate, Harvard University
  1974 : Research Associate, Berkeley, University of California
  1975-78: Member, Steering Committee general faculty
  1980 : Research Associate, Berkeley, University of California
  1986 : Chair, Faculty Committee on Research

FIELDS OF INTEREST

    Analysis, Mathematical Physics

Reese T. Prosser

Supplementary Information

Awards and Honors
> Who's Who in America, 1972.

Memberships in Professional Societies
> American Institute of Aeronautics and Astronautics
> American Mathematics Society
> American Physical Society,
> Association for Computing Machinery,
> Institute for Electrical and Electronic Engineers (Senior Member),
> New York Academy of Sciences,
> Society for Industrial and Applied Mathematics,

Academic Activities at Dartmouth
Undergraduate Courses: Ml, M2, M3, M4, M5, M8, M12, M13, M14, M15,
M23, M33, M43, M46, M63, M83, M88.
Graduate Courses: M103, M113, M116, M123, M126.
Seminars: Fourier Analysis, Function Spaces, Lie Theory, Index Theorem, Inverse Problems, Signal
Processing, Random Fields, Random Networks, Stationary Processes, Stefan Problems, Probabilities in
Genetics.
Lectures: Several Department Colloquia, Several Undergraduate Mathematics Seminars.
Summer Course with Professor Harry Bond.

Theses supervised at Dartmouth
> Ben Roth (Occidental), 1969
> Thomas Crampton (Harvard), 1970
> Gunnar Liepins (University of California, Berkeley), 1974
> Richard Burkhart (Reed), 1976
> Lucy Garnett (MIT), 1981
> Peter Doyle (Harvard), 1982
> J. Todd Whitbold (Cornell), 1989
> Leigh Atkinson, Jr. (University of Mississippi). 1989
> George Welch (Univ. of Alaska). 1992

Institutional and Departmental Service
Institutional:
Associate Dean for the Science Division, 1971
Associate Dean of Graduate Studies, 1971.

Member, Committee on Sponsored Research
Member, Council on Honorary Degrees, 1978-80, 1989-90
Chair. Council on Honorary Degrees, 1980
Member, Steering Committee of the General Faculty, 1981-82
Departmental:
       Vice Chairman, 1970-71
       Member, Recruiting Committee
       Member, Grad Admissions Committee
       Member, Faculty Recruiting Committee
       Chair, Social Committee

Sponsored Research

Research Sponsored by:
       NSF (1966-68, Myron Tribus, PT) ONR (1968-70, Edward Reiss, NYU, P1) NSF (1986, RTP P1) AFOSR (1988-1990, Harry Moses, BU, P1) NSF (1988, Richard Crowell, P1) NSF (1989-92, Richard Crowell, Fl) DARPA(1990-1993, RTP P1) DARPA(1993-1996, RTP P1, pending)

Professional Meetings

       AMS National Winter Meeting (every year)
       Numerous AMS Regional Meetings

Grants Reviewed

       (about 6 per year)

Manuscripts Reviewed

       (about 10 per **year)**

Books Reviewed

       (about 2 per year)

Consulting
       (None)

Refereed Papers

       (about 10 per year)

Published Abstracts
       (None)

Invited Lectures

       Univ. of Hawaii, Six Lectures on the Problems of Hubert
       Princeton Univ., Lecture on Classical Dynamics
       Rockefeller Univ., Lecture on Inverse Problems
       Univ. of Oregon, Lecture on Correspondence Principle

PUBLICATIONS

Papers

1. "Applications of Boolean Matrices to the Analysis of Flow Diagrams," Proc. Eastern Joint Computer Conference (1959), pp. 133-138.

2. "On the Consistency of the Photon Electron System 1,11," Group Reports 22G-0009, 22G-0034 (1959), Lincoln Laboratory, MIT.

3. "Mathematical Foundations of Scattering Theory," Group Report 55G-0033 (1961), Lincoln Laboratory, MIT.

4. "Routing Procedures in Communications Networks 1,11," IRE PGCS **CS-10** No. 4 (1962), pp. 322-329.

5. "On the Ideal Structure of Operator Algebras," Amer. Math. Soc., Memoir No. 45 (1963).

6. "On the Consistency of Quantum Field Theory," Bull. Amer. Math. Soc. 69 (1963), pp. 552-557.

7. "Relativistic Potential Scattering," J. Math. Phys. 4 (1963), pp. 1048-1054.

8. "Convergent Pertubation Expansions for Certain Wave Operators," J. Math. Phys. 5 (1964), pp. 708-713.

9. "Segal's Quantization Procedure," J. Math. Phys. 5 (1964), pp. 701-707.

10. "An Inequality for Certain Correlation Functions," Group Report No. 1964-63 (1964), Lincoln Laboratory, MIT.

11. "The Lincoln Calibration Sphere," Proc. IEEE 53 (1965), P. 1672.

12. "Notes on the Inverse Problem for Radiation Scattering," Scattering of Electro-magnetic Waves, Technical Report No. 402 (1965), Lincoln Laboratory, MIT.

13. "The e-Entropy and e-Capacity of Certain Time-Varying Channels," Jour. Math. Anal. Appi. 16 (1966), pp. 554-573.

14. "A New Formulation of Particle Mechanics," Amer. Math. Soc., Memoir No. 61 (1966), Providence, RI.

15. "A Multidimensional Sampling Theorem," J. Math. Anal. Appi. 16 (1966), pp. 5574-584.

16. "Determinable Classes of Channels" (with Wm. L. Root), J. Math. Mech. (1966), pp. 365-398.

17. "On the Identification of Unknown Systems" (with Wm. L. Root), Symposium on Systems Theory (1967), Princeton Univ., Princeton, NJ.

18. "Formal Solutions for Inverse Scattering Problems," GISAT Symposium Proceedings (1967), Mitre Corp., Bedford, Mass., J. Math. Phys. 10 (1969), pp. 1819-1822.

19. 'On a Similarity Invariant for Compact Operators," Trans. Amer. Math. Soc. 134 (1968), pp. 171-181.

20. "The e-Entropy and e-Capacity of Certain Time-Invariant Channels" (with Wm. L. Root), J. Math. Anal. Appi. 21 (1968), pp. 233-241.

21. "A Spectral Analysis of Central Force Motion," J. Math. Phys. 10 (1969), pp. 2233-2237.

22. "On a Similarity Invariant for Compact Operators," Trans. Amer. Math.Soc. 134 (1968), pp. 171-181.

23. "Note on Metric Dimension," Proc. Amer. Math. Soc. 25 (1970), pp. 763-765.

24. "A Brief Derivation of the Heisenberg Commutation Relations," Proc. Amer. Math. Soc. 26 (1970), pp. 640-641.

25. "Determinable Classes of Channels II," Indiana Math. J. 20 (1971), pp. 789-806. 26. "A Form of the Moment Problem for Lie Groups," Proc. J. Math. 38 (1971), pp. 543-549.

27. "On the Analysis and Synthesis of Certain Abstract Systems," Bull. Amer. Math. Soc. 77 (1971), pp. 444-448.

28. "On the Asymptotic Behavior of Certain Dynamical Systems," J. Math. Phys. 13 (1972), pp. 186-196.

29. "A Comparison Theorem for Operators with Compact Resolvent," Proc. Amer. Math. Soc. 27 (1971), pp. 519-521.

30. "A Double Scale of Weighted L Spaces." Bull. Amer. Math. Soc. 81 (1975), pp. 615-618.

31. "Formal Solutions for Inverse Scattering Problems II," J. Math. Phys. 17 (1976). pp. 1775-1780.

32. "Can One See the Shape of a Surface?," Math. Monthly 84 (1977), pp. 259-270. 33. "Vector Integrals and Wave Operators," Proceedings, Special Session on Vector Integrals. Amer. Math. Soc. Annual Winter Meeting (1976).

34. "Poisson Brackets and Commutator Brackets," I, Proc. Amer. Math. Soc. 62 (1977), pp. 305-309: II. Proc. Amer. Math. Soc. 62 (1977), pp. 310-315.

35. "Weighted L Spaces." (68 pp.), (unpublished).

36. "Local Index Theory," (65 pp.), (unpublished).

37. "The Jost-Kohn Algorithm for Inverse Scattering," Proceedings, Conference on Mathematical Methods and Applications of Scattering Theory, Springer Lecture Notes in Physics 130 (1980).

38. "Inverse Scattering in Three Dimensions," Procedings, Conference on Ill-Posed Problems (Oct 1979), Univ. of Delaware, Newark, Del.

39. "Formal Solutions of Inverse Scattering Problems III," J. Math. Phys. 21 (1980), pp. 2648-2653.

40. "Spectral Properties of Certain Pseudodifferential Operators," 26 pages (unpublished).

41. "Formal Solutions of Inverse Scattering Problems IV," J. Math. Phys. 23 (1982), pp. 2127-2130.

42. "The Gelfand-Levitan Equation on a Finite Interval," (with Harry E. Moses), J. Math. Phys. 24 (1983), pp. 2146-2151.

43. "On the Correspondence Between Classical and Quantum Mechanics. I" , J. Math. Phys. 24 (1983), pp. 548-552.

45. "On the Solution of the Gelfand-Levitan Equation," J. Math. Phys. 25 (1984), pp. 1924-1929.

46. "Approximation Methods and Error Estimates for Inverse Scattering Problems," Proceedings, Conference on Inverse Scattering (June 1983), Tulsa, Oklahoma; SIAM Press, 1983 (pp. 100-111).

47. "Phases of Complex Functions from the Amplitudes of the Functions and the Amplitudes of their Fourier and Mellin Transforms" (with Harry E. Moses), J. Optical Soc. Am. 73 (1983), pp. 1451-1454. 48. "Eigenvalues and Eigenfunctions Associated with the Gelfand-Levitan Equation" (with Harry E. Moses), J. Math. Phys. 25 (1984), pp. 108-112.

49. "Exact Matrix Elements for One-Photon Emission from Hydrogenic Bound States" (with Harry E. Moses), Phys. Rev. A30 (1984), pp. 2148-2149.

50. "Initial Conditions, Sources, and Currents for Prescribed Time-Dependent Acoustic and Electromagnetic Fields in Three Dimensions" (with **Harry** E. Moses), IEEE Trans. Ant. and Prop. **AP-24** (1986), pp. 188-196.

51. "What Good is Mathematics?" UMAP J. 9(1988), pp. 99-106.

52. "A Refinement of the Radon Transform and its Inverse" (with Harry E. Moses), Proc. Royal Soc. London A422(1989), pp. 343-349.

53. "Exact Solutions of the Three-Dimensional Scalar Wave Equation and Maxwell's Equations from the Approximate Solutions in the Wave Zone through the Use of the Radon Transform" (with **Harry** E. Moses), Proc Royal Soc. Lond. **A422** (1989), pp.351-365.

54. "Acoustic and Electromagnetic Bullets" (with Harry E. Moses), SIAM J. Appi. Math. 50 (1989), pp.1325-1340.

55. "The General Solution of the Time-Dependent Maxwell's Equations in an Infinite Medium with Constant Conductivity" (with Harry E. Moses), Proc. Royal Acad. Lond. **A431** (1990), pp. 493-507.

56. "Pulsed Sources and Currents for Acoustic and Electromagnetic Bullets" (with Harry E. Moses), Proc. SPIE 1226 (1990), pp 352-363.

57. "Time Development of Acoustic Bullets" (with Hairy E. Moses), Proc. SPIE 1407 (1991), pp. 354-374.

58. "Computers with Calculus at Dartmouth", (with Richard H. Crowell), Primus 1(1991), pp. 149-158.

59. "Bounds for the Exact Matrix Elements for Radiation Processes in Hydrogenic Atoms," (with Hairy E. Moses), J. Math. Phys. 33 (1992), pp. 1878-1886.

60. "Formal Solutions for Inverse Scattering Problems", J. Math Phys. 33 (1992), pp. 3493-3496.

61. "Bounds for the Appell Function F2", J. Math. Anal. Appl. 172 (1993) (in galley).

62. "Decay of the Relative Error in the Formation of Acoustic Bullets" (with Harry E. Moses), SIAM J. Appi. Math. (accepted).

63. "On the Kummer Solutions of the Hypergeometric Equation", MAA Math. Monthly (accepted).

64. "Propagation of an Electromagnetic Field through a Planar Slab" (with Harry E. Moses) J. Math Anal. Appi. (submitted)

65. "On the Correspondence Between Classical and Quantum Mechanics II", J. Math. Phys. (submitted)

66. "On the Correspondence Between Classical and Quantum Mechanics III", J. Math. Phys. (submitted)

67. "On the Spectrum of the Hydrogen Atom", J. Math. Phys. (submitted).

68. "On the Correspondence between Classical and Quantum Mechanics IV", J. Math. Phys. (in preparation)

Books

1. **"20th** Century Reflections". (with Harold Bond. Henry Ehrniann, and Robert Greenleaf), Dartmouth College Alumni Lectures, Stinehour Press, Hanover, NH, 1972.

2. "Probability with Computing" (with J. L. Snell), McGraw-Hill, New York, 1989.

3. "True Calculus", in preparation.