

Publications of Edward Nelson

BOOKS

<http://www.math.princeton.edu/~nelson/books.html>

1. [Dynamical Theories of Brownian Motion](#), Mathematical Notes, Princeton University Press, 1967.
2. [Tensor Analysis](#), Mathematical Notes, Princeton University Press, 1967.
3. [Topics in Dynamics I: Flows](#), Mathematical Notes, Princeton University Press, 1969.
4. [Quantum Fluctuations](#), Princeton Series in Physics, Princeton University Press, 1985.
5. [Predicative Arithmetic](#), Mathematical Notes, Princeton University Press, 1986.
6. [Radically Elementary Probability Theory](#), Annals of Mathematics Studies, Princeton University Press, 1987. [Also in [French](#) and [Russian](#) translations.]

ARTICLES

1. Kernel functions and eigenfunction expansions, *Duke Mathematical Journal* 25 (1958), 15–28.
2. A functional calculus using singular Laplace integrals, *Transactions of the American Mathematical Society* 88 (1958), 400–413. [Online at [JSTOR](#).]
3. An existence theorem for second order parabolic equations, *Transactions of the American Mathematical Society*, 88 (1958), 414–429. [Online at [JSTOR](#).]
4. The adjoint Markoff process, *Duke Mathematical Journal* 25 (1958), 671–690.
5. Representation of a Markovian semigroup and its infinitesimal generator, *Journal of Mathematics and Mechanics* 7 (1958), 977–988.
6. Regular probability measures on functions space, *Annals of Mathematics* 69 (1959), 630–643. [Online at [JSTOR](#).]
7. Correction to “Kernel functions and eigenfunctions expansions,” *Duke Mathematical Journal* 26 (1959), 697–698.
8. (with W. F. Stinespring) Representation of elliptic operators in an enveloping algebra, *American Journal of Mathematics* 81 (1959), 547–560. [Online at [JSTOR](#).]
9. Analytic vectors, *Annals of Mathematics* 70 (1959), 572–615. [Online at [JSTOR](#).]
10. The distinguished boundary of the unit operator ball, *Proceedings of the American Mathematical Society* 12 (1961), 994–995. [Online at [JSTOR](#).]
11. A proof of Liouville’s theorem, *Proceedings of the American Mathematical Society* 12 (1961), 995. [Online at [JSTOR](#).]

12. L'équation de Schrödinger et les intégrales de Feynman, *Colloques Internationaux du CNRS* 117 (1963), 151–158.
13. Les écoulements incompressibles d'énergie finie, *Colloques Internationaux du CNRS* 117 (1962), 1–7.
14. Feynman integrals and the Schrödinger equation, *Journal of Mathematical Physics* 5 (1964), 332–343.
15. Schrödinger particles interacting with a quantized scalar field, pp. 87–120 in *Proceedings of a Conference on the Theory and Applications of Analysis in Function Space*, held in Endicott House in Dedham, Massachusetts, June 9–13, 1963, ed. by William Ted Martin and Irving Segal, MIT Press, Cambridge, MA, 1964.
16. Interaction of non-relativistic particles with a quantized scalar field, *Journal of Mathematical Physics* 5 1964, 1190–1197.
17. A quartic interaction in two dimensions, pp. 69–73 in *Proceedings of the Conference on the Mathematical Theory of Elementary Particles*, held at Endicott House in Dedham, Mass. September 12–15, 1965, ed. by Roe Goodman and Irving Segal, MIT Press, Cambridge, MA, 1966.
18. Derivation of the Schrödinger equation from Newtonian mechanics, *Physical Review* 150 (1966), 1079–1085.
19. Operants: a functional calculus for non-commuting operators, pp. 172–187 in *Functional Analysis and Related Fields* (Proceedings of a Conference in honor of Professor Marshall Stone, held at the University of Chicago, May 1968), ed. by Felix E. Browder, Springer-Verlag, New York, 1970.
20. Time ordered operator products of sharp-time quadratic forms, *Journal of Functional Analysis* 2 (1972), 211–219.
21. Quantum fields and Markoff fields, pp. 413–420 in *Partial Differential Equations* (Proc. Sympos. Pure Math, XXIII, held at the University of California, Berkeley, August 9–27, 1971), ed. by D. C. Spencer, American Mathematical Society, Providence, RI, 1973.
22. Construction of quantum fields from Markoff fields, *Journal of Functional Analysis* 12 (1973), 97–112.
23. The free Markoff field, *Journal of Functional Analysis* 12 (1973), 211–227.
24. Note on non-commutative integration, *Journal of Functional Analysis* 15 (1974), 103–116.
25. Remarks on Markov field equations, pp. 136–143 in *Functional Integration and Its Applications* (Proceedings of the International held at Cumberland Lodge, Windsor Great Park, London, in April 1974), ed. by A. M. Arthurs, Clarendon Press, Oxford, UK, 1975.
26. Markov fields, pp. 395–402 in *Proceedings of the International Congress of Mathematicians, Vancouver, 1974*, Vol. 2, ed. by Ralph D. James, Canadian Mathematical Congress, Ottawa, 1975.

27. Probability theory and Euclidean field theory, pp. 94–124 in *Constructive Quantum Field Theory*, ed. by G. Velo and A. Wightman, Lecture Notes in Physics 25, Springer-Verlag, New York, 1973.
28. Internal set theory: a new approach to nonstandard analysis, *Bulletin of the American Mathematical Society*, 83 (1977), 1165–1198.
29. Review of “Le Mouvement Brownian Relativiste” by J. P. Caubet, *Bulletin of the American Mathematical Society*, 84 (1978), 121–124.
30. Connection between Brownian motion and quantum mechanics, pp. 168–179 in *Einstein Symposium, Berlin*, Lecture Notes in Physics 100, ed. by H. Nelkowski, A. Hermann, H. Poser, R. Schrader, and R. Seiler, Springer-Verlag, Berlin, 1979.
31. The use of the Wiener process in quantum theory, pp. 565–579 in *Norbert Wiener: Collected Works*, Vol. III, ed. by P. Masani, MIT Press, Cambridge, MA, 1981.
32. Introduction, pp. xv–xvii in *Studies in Applied Mathematics: A volume dedicated to Irving Segal*, Advances in Mathematics Supplementary Studies, Vol. 8, ed. by Victor Guillemin, Academic Press, New York, 1983.
33. A remark on the polymer problem in four dimension, pp. 1–5 in *Studies in Applied Mathematics: A volume dedicated to Irving Segal*, Advances in Mathematics Supplementary Studies, Vol. 8, ed. by Victor Guillemin, Academic Press, New York, 1983.
34. Review of “Functional Integration and Quantum Physics” by James Glimm and Arthur Jaffe, *Bulletin American Mathematical Society (New Series)* 8 (1983), 378–380.
35. Quantum Fluctuations—an introduction, *Physica* 124A (1984), 509–520.
36. Physical reality and mathematical form, *Sankhyá* (The Indian Journal of Statistics) Series A 47 (1985), 1–5.
37. Critical diffusions, pp. 1–11 in *Séminaire de Probabilités XIX 1983–84*, ed. by J. Azéma and M. Yor, Lecture Notes in Mathematics 1123, Springer-Verlag, New York, 1985.
38. Forma matematica e realtà fisica, pp. 545–550 in *Stochastic Processes in Classical and Quantum Systems* (Proceedings, Ascona, Switzerland, 1985), ed. by S. Albeverio, G. Casati, and D. Merlini, Lecture Notes in Physics 262, Springer-Verlag, Berlin, 1986.
39. Field theory and the future of stochastic mechanics, pp. 438–469 in *Stochastic Processes in Classical and Quantum Systems* (Proceedings, Ascona, Switzerland, 1985), ed. by S. Albeverio, G. Casati, and D. Merlini, Lecture Notes in Physics 262, Springer-Verlag, Berlin, 1986. [See correction in 45.]
40. A survey of stochastic mechanics, *Proceedings of the International Conference on Quantum Statistics and Foundational Problems on Quantum Mechanics*, Hadronic Journal Supplement, Vol. 1, 1985, 401–412.
41. What is stochastic mechanics? in “Mathématiques Finitaires et Analyse non-Standard,” *Journées Société Mathématique de France*, CIRM, Luminy, 1985, 1–4.

42. A modified Hilbert program, in “Mathématiques Finitaires et Analyse non-Standard,” *Journées Société Mathématique de France*, CIRM, Luminy, 1985, 299–304.
43. The syntax of nonstandard analysis, *Annals of Pure and Applied Logic* 38 (1988), 123–134.
44. The locality problem in stochastic mechanics, pp. 533–538 in *New Techniques and Ideas in Quantum Measurement Theory*, Annals of the New York Academy of Sciences Vol. 480, ed. by Daniel M. Greenberger, New York Academy of Sciences, New York, 1986. [See correction in 45.]
45. Stochastic mechanics and random fields, pp. 427–450 in *École d’Été de Probabilités de Saint-Flour XV-XVII, 1985–87*, ed. by P. L. Hennequin, Lecture Notes in Mathematics 1362, Springer-Verlag, Berlin, 1988. [This includes corrections to the discussion of Bell’s inequality in references 39 and 44 and also some corrections to the *Quantum Fluctuations* book.]
46. A survey of stochastic mechanics, pp. 186–192 in *Proceedings of the First Workshop on Fundamental Physics at the University of Puerto Rico*, ed. by A. Rueda, University of Puerto Rico at Humacao, 1987.
47. A feeling of great surprise that there is anything, pp. 75–77 in *Cosmos, Bios, Theos: Scientists Reflect on Science, God, and the Origins of the Universe, Life, and Homo Sapiens*, ed. by Henry Margenau and Roy Abraham Varghese, Open Court, La Salle, Illinois, 1992.
48. Taking formalism seriously, in *Logic, Methodology and Philosophy of Science IX, Proceedings of the Ninth International Congress of Logic, Methodology and Philosophy of Science, Uppsala, Sweden, August 7–14, 1991*, Studies in Logic and the Foundations of Mathematics 134, ed. by Dag Prawitz, Brian Skyrms and Dag Westerståhl, Elsevier, Amsterdam/New York, 1994.
49. Taking formalism seriously, *Mathematical Intelligencer*, 15/3, pp. 8–11, 1993. [Edited version of the item above.]
50. Ramified recursion and intuitionism, in *Colloque trajectorien a la memoire de Georges Reeb et Jean-Louis Callot*, (Stasbourg-Obermai June 12–16, 1995) ed. by A. Fruchard and A. Troesch, Prepubl. IRMA, Strasbourg, 1995. [Also online, see below.]
51. Confessioni d’un matematico apostata, [Nuova Civiltà delle Macchine](#), pp. 243–247, 1997. [Published online in English; see below.]
52. Mathematics and the mind, pp. 89–94 in *No Matter, Never Mind*, Proceedings of [Toward a Science of Consciousness: Fundamental approaches](#), (Tokyo 1999) ed. by Kunio Yasue, Mari Jibu and Tarcisio Della Senta, John Benjamins, Amsterdam/Philadelphia, 2001.
53. Review of “Gnomes in the Fog: The reception of Brouwer’s intuitionism in the 1920s” by Dennis E. Hesseling, *Bulletin American Mathematical Society* (New Series) 41 (2004), 545–549. [Online at [AMS](#).]
54. Rejecting the realm of numbers, pp. 213–216 in *Spiritual Information: 100 perspectives on science and religion*, Essays in honor of Sir John Templeton’s 90th birthday, ed. by Charles L. Harper Jr., Templeton Foundation Press, Philadelphia, 2005.

55. The virtue of simplicity, pp. 27–32 in *The Strength of Nonstandard Analysis*, Imme van den Berg and Vítor Neves, eds., Springer-Verlag, 2006.
56. Afterword, pp. 227–230 in *Diffusion, Quantum Theory, and Radically Elementary Mathematics*, Mathematical Notes 47, ed. by William G. Faris, Princeton University Press, Princeton, New Jersey, 2006.
57. Sintassi e semantica, pp. 51–59, *Matematica e filosofia: il problema dei fondamenti oggi*, translated by Fabio Minazzi, Pristem/Storia 14-15, Milan, 2006.
58. L’infinito in aritmetica, pp. 77-80 in *La ragione esigenza di infinito*, ed. by Giorgio Vittadini, Mondadori Università, Milan, 2007.
59. [Review](#) of “18 Unconventional Essays on the Nature of Mathematics” edited by Reuben Hersch, *American Mathematical Monthly*, November 2007.
60. Warning signs of a possible collapse of contemporary mathematics, to appear in “New Frontiers of Research on Infinity”, Princeton University Press.

ARTICLES ONLINE

<http://www.math.princeton.edu/~nelson/papers.html>

1. [Space-Time-Chance](#), talk at the [Center of Theological Inquiry](#), October 1988.
2. [Confessions of an apostate mathematician](#), debate with Ennio De Giorgi, Forlì, Italy, 1995. [Journal publication in Italian; see 51 above.]
3. [Ramified recursion and intuitionism](#), presented to *Colloque trajectorien a la memoire de Georges Reeb et Jean-Louis Callot*. Strasbourg/Obernai, June 12–16, 1995. [Also IRMA publication; see 50 above.].
4. [Understanding Intuitionism](#), presented to the [Rencontre du Réseau Georges Reeb](#), March 24–28, Luminy, France, 1997.
5. [Mathematics and faith](#), in “The Human Search for Truth: Philosophy, Science, Theology – *The Outlook for the Third Millennium*,” International Conference on Science and Faith, The Vatican, 23-25 May 2000, St. Joseph’s University Press, Philadelphia, 2002.
6. [Syntax and semantics](#), presented to [International Conference: “Foundations and the Ontological Quest. Prospects for the New Millennium”](#), Pontifical Lateran University, Vatican City, January 7–10, 2002.
7. [Completed versus incomplete infinity in arithmetic](#), presented to [STOQ International Conference on Infinity in Science, Philosophy, and Theology](#), Pontifical Lateran University, Vatican City, November 9–11, 2005.