

Bryce S. DeWitt

PUBLICATIONS

1. "Point Transformations in Quantum Mechanics," *Physical Review*, **85**, 663–661 (1952).
2. (With Cécile M. DeWitt) "The Quantum Theory of Interacting Gravitational and Spinor Fields," *Physical Review*, **87**, 116–122 (1952).
3. "State Vector Normalization in Formal Scattering Theory," *Physical Review*, **100**, 905–911 (1955).
4. *The Operator Formalism in Quantum Perturbation Theory*, University of California Radiation Laboratory Publication no. 2884 (1955), 280 pp.
5. "Transition from Discrete to Continuous Spectra," *Physical Review*, **103**, 1565–1571 (1956).
6. "Dynamical Theory in Curved Spaces. I. A Review of the Classical and Quantum Action Principles," *Reviews of Modern Physics*, **29**, 377–397 (1957).
7. "Principal Directions of Current Research Activity in the Theory of Gravitation," *Journal of Astronautics*, **4**, 23–28 (1957).
8. "Principal Directions in Current Research on Gravitation," in *Advances in Astronautical Sciences*, Vol. 1. (Plenum Press, Inc., New York, 1957), pp. 157–168.
9. "Quantum Theories of Gravity," " *General Relativity and Gravitation*, **1**, 181 (1958).
10. "The Scientific Uses of Large Space Ships," General Atomic Report GAMD 965 (1959), 40 pp.
11. (With Robert W. Brehme) "Radiation Damping in a Gravitational Field," *Annals of Physics (N.Y.)*, **9**, 220–259 (1960).
12. "Freinage dû à la Radiation d'une Particule dans un Champ de Gravitation," in *Les Theories Relativistes de la Gravitation*, Colloque International organisé à Royamont du 21 au 27 juin 1959 (Centre National de la Recherche Scientifique, Paris, 1962), pp. 335–343.
13. "Invariant Commutators for the Quantized Gravitational Field," *Physical Review Letters*, **4**, 317–320 (1960).
14. "Quantization of Fields with Infinite-Dimensional Invariance Groups," *Journal of Mathematical Physics*, **2**, 151–162 (1961).
15. "Invariant Commutators for the Quantized Gravitational Field," in *Recent Developments in General Relativity* (Pergamon Press, London, 1962), pp. 175–189.

16. “Quantum Theory without Electromagnetic Potentials,” *Physical Review*, **125**, 2189–2191 (1962).
17. (With Ryoyu Utiyama) “Renormalization of a Classical Gravitational Field Interacting with Quantized Matter Fields,” *Journal of Mathematical Physics*, **3**, 608–618 (1962).
18. “Quantization of Fields with Infinite-Dimensional Invariance Groups. II. Anticommuting Fields,” *Journal of Mathematical Physics*, **3**, 625–636 (1962).
19. “Definition of Commutators via the Uncertainty Principle,” *Journal of Mathematical Physics*, **3**, 619–624 (1962).
20. “Quantization of Fields with Infinite-Dimensional Invariance Groups. III. Generalized Schwinger-Feynman Theory,” *Journal of Mathematical Physics*, **3**, 1073–1093 (1962).
21. “The Quantization of Geometry,” in *Proceedings of the Eastern Theoretical Physics Conference*, October 26 & 27, 1962, M. E. Rose, ed. (Gordon and Breach, Science Publishers, New York, 1963), pp. 353–386.
22. “The Quantization of Geometry,” in *Gravitation: An Introduction to Current Research*, L. Witten, ed. (John Wiley & Sons, New York, 1963), Chapter 8, pp. 266–381.
23. (With Cécile M. DeWitt, eds.) *Relativity, Groups and Topology, 1963 Les Houches Lectures* (Gordon and Breach Science Publishers, Inc., New York and London, 1964), 929 pp.
24. “The Quantization of Geometry,” in *Proceedings on the Theory of Gravitation*, Conference in Warszawa and Jabłonna 25–31 July 1962 (PWN-Editions Scientifiques de Pologne, Warszawa, 1964) pp. 131–147.
25. “Gravity,” in *Advances in Space Science and Technology*, Vol. VI, Frederick I. Ordway, III, ed. (Academic Press, New York and London, 1964) pp. 1–37.
26. (With Cécile M. DeWitt) “Falling Charges,” *Physics*, **1**, 3–20 (1964).
27. “Theory of Radiative Corrections for Non-Abelian Gauge Fields,” *Physical Review Letters*, **12**, 742–746 (1964).
28. “Gravity: A Universal Regulator?” *Physical Review Letters*, **13**, 114–118 (1964).
29. *Dynamical Theory of Groups and Fields* (Gordon and Breach Science Publishers, Inc., New York and London, 1965), 248 pp. Translated into Russian and published by “Nauka,” Moscow, 1987.
30. “Superconductors and Gravitational Drag,” *Physical Review Letters*, **16**, 1092–1093 (1966).

31. “Quantum Theory of Gravity. I. The Canonical Theory,” *Physical Review*, **160**, 1113–1148 (1967). Also reprinted in *Quantum Cosmology*, Fang and Ruffini, eds. (World Scientific, Singapore, 1987). Translated into Russian and published by “Nauka,” Moscow, 1987.
32. “Quantum Theory of Gravity. II. The Manifestly Covariant Theory,” *Physical Review*, **162**, 1195–1239 (1967). Also reprinted in *Gauge Theories of Fundamental Interactions*, Mohapatra and Lai, eds. (World Scientific, Singapore, 1981). Translated into Russian and published by “Nauka,” Moscow, 1987.
33. “Quantum Theory of Gravity. III. Application of the Covariant Theory,” *Physical Review*, **162**, 1239–1256 (1967). Also reprinted in *Gauge Theories of Fundamental Interactions*, Mohapatra and Lai, eds. (World Scientific, Singapore, 1981).
34. “Eversion of the 2-Sphere,” in *Battelle Rencontres: 1967 Lectures in Mathematics and Physics*, C. M. DeWitt and J. A. Wheeler, eds. (W. A. Benjamin, Inc., New York, 1968), pp. 546–557.
35. “The Everett-Wheeler Interpretation of Quantum Mechanics,” in *Battelle Rencontres: 1967 Lectures in Mathematics and Physics*, C. M. DeWitt and J. A. Wheeler, eds. (W. A. Benjamin, Inc., New York, 1968), pp. 318–332.
36. “Spacetime as a Sheaf of Geodesics in Superspace,” in *Relativity: Proceedings of the Relativity Conference in the Midwest*, M. Carmeli, S. I. Fickler and L. Witten, eds. (Plenum Press, New York, 1970), pp. 359–374.
37. “Quantum Mechanics and Reality,” *Physics Today*, **23**, No. 9, 30–35 (1970).
38. (With L. E. Ballentine, P. Pearle, E. H. Walker, M. Sachs, T. Koga, and J. Gerver) “Quantum Mechanics Debate,” *Physics Today*, **24**, No. 4, 36–44 (1971).
39. “Quantum Theories of Gravity,” *General Relativity and Gravitation*, **1**, 181–189 (1970).
40. “The Many-Universes Interpretation of Quantum Mechanics,” in *Proceedings of the International School of Physics “Enrico Fermi” Course II: Foundations of Quantum Mechanics*. (Academic Press, Inc., New York, 1971), pp. 211–262. Also reprinted in *The Many-Worlds Interpretation of Quantum Mechanics*, DeWitt and Graham, eds. (Princeton University Press, 1973).
41. (With R. Neill Graham) “Resource Letter IQM-1 on the Interpretation of Quantum Mechanics.” *American Journal of Physics*, **39**, 724–738 (1971).
42. “Covariant Quantum Geometrodynamics,” in *Magic Without Magic: John Archibald Wheeler*, J. R. Klauder, ed. (W. H. Freeman, San Francisco, 1972), pp. 409–440.

43. Book review of *The Large Scale Structure of Spacetime* by S.W. Hawking and G.F.R. Ellis (Cambridge, 1973), *Science*, **182** (1973), pp. 705-06.
44. Ed., *Lectures on Electrodynamics*, J. R. Oppenheimer (Gordon and Breach Science Publishers, New York, London, Paris, 1970), x + 164 pp.
45. (With Cécile M. DeWitt, eds.) *Black Holes, 1972 Les Houches Lectures* (Gordon and Breach Science Publishers, New York, London, Paris, 1973), xii + 574 + 161 pp.
46. (With Neill Graham, eds.) *The Many-Worlds Interpretation of Quantum Mechanics* (Princeton University Press, 1973), 250 pp.
47. (With F. Estabrook, H. Wahlquist, S. Christensen, L. Smarr, and E. Tsiang) “Maximally Slicing a Black Hole,” *Physical Review*, **D7**, 2814–2817 (1973).
48. (With R. A. Matzner and A. H. Mikesell) “A Relativity Eclipse Experiment Refurbished,” *Sky and Telescope*, **47**, 301–306 (1974).
49. “The Texas Mauritanian Eclipse Expedition,” in *Gravitation and Relativity: Proceedings of the 7th International Conference on General Relativity and Gravitation, Tel Aviv University, June 1974* (Keter Publishing House, Jerusalem, 1975), pp. 81–86.
50. “Quantum Field Theory in Curved Space,” in *Particles and Fields–1974: AIP Conference Proceedings No. 23, Particles and Fields Subseries No. 10* (American Institute of Physics, New York, 1975), pp. 660–688.
51. “Quantum Field Theory in Curved Spacetime,” *Physics Reports*, **19c**, 295–357 (1975). Translated into Russian for the series *Cherniye Diry: Novosti Fundamentalnoi Fizike* (Mir, Moscow, 1978).
52. (With other members of the Texas Mauritanian Eclipse Team) “Gravitational Deflection of Light: Solar Eclipse of 30 June 1973. I. Description of Procedures and Final Results.” *Astronomical Journal*, **81**, 452–454 (1976).
53. (With L. Smarr, A. Čadež and K. Eppley) “Collision of Two Black Holes: Theoretical Framework,” *Phys. Rev. D*, **14**, 2443 (1976).
54. “Gravitational Deflection of Light. Solar Eclipse of 30 June 1973,” in *Albert Einstein’s Theory of General Relativity*, G. Tauber, ed. (Crown Publishers, New York, 1979), pp. 125–126.
55. “Quantum Gravity: The New Synthesis,” in *General Relativity, An Einstein Centenary Survey*, S. W. Hawking and W. Israel, eds. (Cambridge University Press, 1979), pp. 680–745.

56. (With C. F. Hart and C. J. Isham) “Topology and Quantum Field Theory,” in *Themes in Contemporary Physics: Essays in Honour of Julian Schwinger’s 60th Birthday* (North-Holland, Amsterdam, 1979). Also *Physica*, **96A**, pp. 197–211 (1979).
57. “The Formal Structure of Quantum Gravity,” in *Recent Developments in Gravitation, Cargèse 1978*, M. Lévy and S. Deser, eds. (Plenum Press, New York, 1979), pp. 275–322.
58. “Quantum Gravity,” in *On the Path of Albert Einstein*, B. Kursunoglu, A. Perlmutter and L. F. Scott, eds. (Plenum Press, New York, 1979), pp. 127–143.
59. “A Gauge Invariant Effective Action,” in *Quantum Gravity II*, C. J. Isham, R. Penrose and D. W. Sciama, eds. (Oxford University Press, 1981), pp. 449–487.
60. “Approximate Effective Action for Quantum Gravity,” *Phys. Rev. Letters*, **47**, 1647–1650 (1981).
61. (With P. van Nieuwenhuizen) “Explicit Construction of the Exceptional Superalgebras $F(4)$ and $G(3)$,” *J. Math. Phys.*, **29**, 1953–1963 (182).
62. “Gravitational Deflection of Light: Solar Eclipse of June 30, 1973,” in *National Geographic Society Research Reports Vol. 14, 1973 Projects* (National Geographic Society, 1982), pp. 149–155.
63. “The Gauge Invariant Effective Action for Quantum Gravity and Its Semi-Quantitative Approximation,” in *Gauge Theory and Gravitation*, K. Kikkawa, N. Nakanishi and N. Nariai, eds. (Springer-Verlag, Berlin, 1983), pp. 189–203.
64. “Quantum Gravity,” *Scientific American* Vol. 249, No. 6, pp. 112–129 (1983).
65. (With Raymond Stora, eds.) *Relativity Groups and Topology II* (North-Holland, Amsterdam, 1984), xxxvi + 1323 pp.
66. “The Spacetime Approach to Quantum Field Theory,” in *Relativity, Groups and Topology II*, Bryce DeWitt and Raymond Stora, eds. (North-Holland, Amsterdam, 1984), pp. 381–738.
67. *Supermanifolds* (Cambridge University Press, 1984), pp. i–xii, 1–306.
68. “Topics in Quantum Gravity,” in *General Relativity and Gravitation*, B. Bertotti, F. De Febie and A. Pascolini, eds. (D. Reidel Publishing Co., Dordrecht, 1984), pp. 439–451.
69. “The Early Days of Lagrangian Hydrodynamics at Lawrence Livermore Laboratory,” in *Numerical Astrophysics: Proceedings of a Symposium in Honor of James R. Wilson at the University of Illinois in October, 1982*, J. M. Centrella, J. M. LeBlanc and R. L. Bowers, eds. (Jones and Bartlett Publishers, Boston, 1985), pp. 474–481.

70. Book review of *The Mathematical Theory of Black Holes*, by S. Chandrasekhar (Oxford, 1983), *SIAM Review*, **27**, pp. 97–99 (1985).
71. “Changing Topology”, in *Proceedings of the Santa Fe Meeting: First Annual Meeting (New Series) of the Division of Particles and Fields of the American Physical Society, October 31–November 3, 1984*, T. Goldman and M. M. Nieto, eds. (World Scientific, Philadelphia, Singapore, 1985), pp. 432–436.
72. “Dynamical Suppression of Topological Change”, in *Proceedings of the Third Seminar on Quantum Gravity, October 23–25, 1984, Moscow, U.S.S.R.*, M. A. Markov, V. A. Berezin and V. P. Frolov, eds. (World Scientific, Singapore, 1985), pp. 103–122.
73. (With Arlen Anderson), “Does the Topology of Space Fluctuate?”, *Foundations of Physics*, **16**, pp. 91–105, (1986).
74. “Effective Action for Expectation Values”, in *Proceedings of the Quantum Gravity Discussion Conference, Oxford, March 1984*, R. Penrose ed. (Oxford University Press, 1986), pp. 325–336.
75. “The Effective Action,” in *Quantum Field Theory and Quantum Statistics: Essays in Honour of the 60th Birthday of E. S. Fradkin*, eds., I. A. Batalin, C. J. Isham and G. A. Vilkovisky (Adam Hilger, Bristol and Boston, 1987), pp. 191–222.
76. “The Effective Action,” in *Architecture of Fundamental Interactions at Short Distances*, eds., P. Ramond and R. Stora (North-Holland, Amsterdam, 1987), pp. 1023–1057.
77. “Does Conventional Quantum Gravity Exist?” in *Quantum Gravity: Proceedings of the Fourth Seminar on Quantum Gravity, Moscow, U.S.S.R., 25–29 May 1987*, eds. M. Markov, V. Berezin, and V. Frolov (World Scientific, Singapore, 1987), pp. 94–124.
78. Book review of *Three Hundred Years of Gravitation*, eds. S. W. Hawking and W. Israel (Cambridge, 1987), *Am. J. Phys.*, **55** (1988), pp. 1050–52.
79. “The Uses and Implications of Curved-Spacetime Propagators: A Personal View,” Dirac Medal Lecture (International Centre for Theoretical Physics, Trieste, 1988), pp. 11–40. Reprinted in *Forty More Years of Ramifications: Spectral Asymptotics and Its Applications (Discourses in Mathematics and Its Applications)*, eds. S. A. Fulling and F. J. Narcowich (Texas A & M University, 1991), pp. 27–48. Also reprinted in *Julian Schwinger. The Physicist, the Teacher, and the Man*, ed. Y.J. Ng (World Scientific, Singapore, 1996), pp. 33–59.
80. “The Casimir Effect in Field Theory,” in *Physics in the Making—Essays in Honor of H. B. G. Casimir*, eds., A. Sarlemijn and M. J. Sparnaay (North-Holland, Amsterdam, 1989), pp. 247–272.

81. “Nonlinear Sigma Models in 4 Dimensions as Toy Models for Quantum Gravity,” in *Geometrical and Algebraic Aspects of Nonlinear Field Theory*, eds., S. De Filippo, M. Marinaro, G. Marmo, and G. Vilasi (Elsevier Science Publishers B. V., North-Holland, 1989), pp. 97–112.
82. “The Vilkovisky Effective Action,” in *TeV Physics: Proceedings of the Johns Hopkins Workshop on Current Problems in Particle Theory 12*, eds. G. Domokos and S. Kovesi-Domokos (World Scientific, Singapore, 1989), pp.
83. “Nonlinear Sigma Models in 4 Dimensions: A Lattice Definition,” in *Quantum Mechanics in Curved Space-Time*, eds., J. Audretsch and V. de Sabbata (Plenum Press, New York and London, 1990), pp. 431–471.
84. (With Cécile DeWitt-Morette) “The Pin Groups in Physics,” *Phys. Rev.* **D41** (1990), pp. 1901–1907.
85. “Nonlinear Sigma Models in 4 Dimensions as Toy Models for Quantum Gravity,” in *Conceptual Problems of Quantum Gravity: Proceedings of the 1988 Osgood Hill Conference*, eds. A. Ashtekar and J. Stachel (Birkhäuser, Boston, 1991).
86. (With E. Myers, R. Harrington, A. Kapulkin, J. de Lyra, S. K. Foong and T. Gallivan) “Lattice Quantization of the $O(1, 2)/O(2) \times Z_2$ Sigma Model in 4 Dimensions,” in *Quantum Gravity (Proceedings of the Fifth Moscow Quantum Gravity Seminar)*, eds. M. A. Markov, V. A. Berezin and V. P. Frolov (World Scientific, 1991), pp. 18–26.
87. (With Eric Myers, Rob Harrington and Arie Kapulkin) “Noncompact Nonlinear Sigma Models and Numerical Quantum Gravity,” *Nuclear Physics B (Proc. Suppl.)* **20** (1991), pp. 744–748.
88. (With Jorge L. deLyra, See Kit Foong, T. E. Gallivan, Rob Harrington, Arie Kapulkin, Eric Myers and Joseph Polchinski) “The Quantized $O(1, 2)/O(2) \times Z_2$ Sigma Model Has No Continuum Limit in Four Dimensions. I. Theoretical Framework,” *Phys. Rev.* **D46** (1992), pp. 2527–2537.
89. (With Jorge L. deLyra, See Kit Foong, T. E. Gallivan, Rob Harrington, Arie Kapulkin, Eric Myers and Joseph Polchinski) “The Quantized $O(1, 2)/O(2) \times Z_2$ Sigma Model Has No Continuum Limit in Four Dimensions. II. Lattice Simulation,” *Phys. Rev.* **D46** (1992), pp. 2538–2552.
90. “How Does the Classical World Emerge from the Wave Function?” In *Quantum Gravity and Beyond*, ed. F. Mansouri (World Scientific 1993) pp. 3–16.
91. *Supermanifolds (Second Edition)* (Cambridge University Press, 1992) pp. i–xviii, 1–407.
92. “Decoherence Without Complexity and Without an Arrow of Time.” In *Physical Origins of Time Asymmetry*, eds. J. Halliwell, J. Pérez-Mercader and W.H. Zurek (Cambridge 1994) pp. 221–233.

93. “Reminiscences of Julian Schwinger.” In *Julian Schwinger. The Physicist, the Teacher, and the Man*, ed. Y.J. Ng (World Scientific, Singapore 1996), pp. 29-31.
94. (With Carmen Molina-Paris) “Gauge Theory Without Ghosts,” in *Functional Integration: Basics and Applications (Cargèse, 1996)*, eds. C. DeWitt-Morette, P. Cartier and A. Folacci (Plenum Publishing Co., 1997) pp. 327-361.
95. “The Quantum and Gravity: The Wheeler-DeWitt Equation,” in *Proceedings of the Eighth Marcel Grossmann Conference, The Hebrew University, Jerusalem, Israel* (World Scientific, 1997).
96. “The Probability Interpretation of Quantum Mechanics.” in *Frontiers in Quantum Physics*, ed. S.C. Lim (Springer Verlag, 1998) pp. 39-49.
97. “The Quantum Mechanics of Isolated Systems,” *Int. J. Mod. Phys. A*, **13** (1998) pp. 1881-1916.
98. (With Carmen Molina-Paris) “Quantum Gravity Without Ghosts,” *Mod. Phys. Lett. A*, **13** (1998) pp. 2475-2479.
99. “Quantum Field Theory and Spacetime – Formalism and Reality,” in *Conceptual Foundations of Quantum Field Theory*, ed. T.Y. Cao (Cambridge University Press, 1999) pp. 176-186.
100. “The Peierls Bracket,” in *Quantum Field Theory: Perspective and Prospective*, eds. C. DeWitt-Morette and J.-B. Zuber (NATO Science Series, Kluwer Academic Publishers, Dordrecht, 1999) pp. 111-138.
101. “Book review of *The Fabric of Reality* by David Deutsch (Penguin Press, 1997), *Natural SCIENCE*, May, 1998.
102. Book review of *Geons, Black Holes and Quantum Foam, A Life in Physics* by John Archibald Wheeler with Kenneth Ford (W.W. Norton, 1998), *Physics in Perspective* **1** (1999) pp. 224-225.
103. *The Global Approach to Quantum Field Theory* (Oxford University Press, 2003), 1042 pages with corrections.
104. “The Everett interpretation of quantum mechanics” in *Science and Ultimate Reality*, eds. J.D. Barrow, P.C.W. Davies and C.S. Harper, Jr. (Cambridge, 2004).
105. (With Cecile DeWitt-Morette) “From Peierls Bracket to the Feynman Functional Integral”, *Annals of Physics* **314**, 448-463 (2004).
106. “The Space of Gauge Fields” in *Structure and Geometry 50 Years of Yang-Mills Theory*, ed. G. tHooft (World Scientific, Singapore, 2005).