

CURRICULUM VITAE

Carlton M. Caves

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PERSONAL

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HIGHER EDUCATION

Rice University, 68–9 to 72–5
B.A. in Physics and Mathematics, summa cum laude, 1972
California Institute of Technology, 72–9 to 79–5
PhD in Physics, 1979 (thesis supervisor: Kip S. Thorne)

PRESENT POSITION

Distinguished Professor, University of New Mexico, 06–8 to present

PREVIOUS POSITIONS

Graduate Research Assistant, California Institute of Technology, 75–10 to 76–9 and 77–10 to 79–5
Research Fellow in Physics, California Institute of Technology, 79–5 to 81–12
Senior Research Fellow in Theoretical Physics, California Institute of Technology, 82–1 to 87–11
Associate Professor of Electrical Engineering/Electrophysics (and Physics, beginning 89–9), University of Southern California, 87–12 to 92–7
Professor of Physics and Astronomy, University of New Mexico, 92–8 to 06–7

TEMPORARY AND VISITING POSITIONS

Member, Institute for Theoretical Physics, University of California, Santa Barbara, 84–1 to 84–6, 96–8 to 96–12, 01–8 to 01–12
Lecturer, California Institute of Technology, 84–10 to 85–9
Visiting Associate in Physics, California Institute of Technology, 87–12 to 93–1
Visiting Professor, Santa Fe Institute, 92–9 to 92–12
Director, Center for Advanced Studies, University of New Mexico, 93–7 to 96–6
Visiting Scholar, University of Queensland, 07–8 to 08–7

FIELDS OF RESEARCH SPECIALIZATION

Physics of information; information, entropy, and complexity; quantum information theory; quantum metrology; quantum chaos
Quantum optics; theory of nonclassical light
Theory of quantum noise; quantum theory of measurement

TEACHING

Caltech:
Gravitation, three-quarter graduate-level course in general relativity and gravitation, 1984–85
University of Southern California:

Fundamentals of Physics II: Optics, Electricity, and Magnetism, one-semester sophomore-level course, fall semester 1991

Electromagnetics I, one-semester junior-level course, fall semesters 1988, 1989, and 1990

Quantum Optics, one-semester graduate-level course, spring semesters 1989, 1991, and 1992

Statistical Optics, one-semester graduate-level course, spring semester 1990

University of New Mexico:

Analytical Mechanics, two-semester upper-division course, 2003–04, 2004–05, and 2006–07

Electricity and Magnetism, two-semester upper-division course, spring and fall semesters 1998, 1999, and 2000, and fall semester 2008

Special Relativity, one-semester upper-division course, spring semester 1995

Statistical Mechanics and Thermodynamics, one-semester graduate-level course, spring semesters 1993 and 1994

Statistical Mechanics II, one-semester graduate-level course, fall semester 1993

Classical Mechanics I, one-semester graduate-level course, fall semesters 1994 and 1995

Classical Mechanics II, one-semester graduate-level course, spring semester 1996

Electrodynamics, one-semester graduate-level course, spring semesters 2001, 2002, and 2003

Quantum Mechanics I, one-semester graduate-level course, spring semester 1997

Quantum Mechanics II, one-semester graduate-level course, fall semester 1997

Quantum Information, one-semester graduate-level course, fall semester 2002

Quantum Information Theory, one-semester graduate-level course, fall semester 2005 and spring semester 2009

Quantum Computation, one-semester graduate-level course, spring semester 2006

Physics 400, one-semester graduate-level problem-solving course, fall semester 1995 and spring semester 1998

Demons, Entropy, Information, and Chaos, one-semester graduate-level seminar course, fall semester 1992

Foundations of Probability Theory and Statistical Physics, one-semester graduate-level seminar course, spring semester 1994

Introduction to Quantum Information and Quantum Computation, one-semester graduate-level seminar course, fall semester 1999 (co-taught with Ivan Deutsch)

Interpretations of Quantum Mechanics, one-semester graduate-level seminar course, fall semester 2000 (co-taught with Ivan Deutsch)

UNIVERSITY SERVICE

University of Southern California:

Graduate Examinations Committee, Department of Electrical Engineering/Electrophysics: member, 1989–90, 1990–91, and 1991–92; acting Chair, 1988–89

Graduate Recruitment and Admissions Committee, Department of Electrical Engineering/Electrophysics: member, 1989–90; Chair, 1990–91 and 1991–92

Faculty Senate, 1991–92

University of New Mexico:

Chair's Advisory Committee, Department of Physics and Astronomy: member, 1993–94, 1994–95, 1995–96, 1997–98, 1998–99, fall 1999, and fall 2004

Colloquium Committee, Department of Physics and Astronomy: member, 1993–94; Chair, 1994–95, 1997–98, 1998–99, and fall 1999

Long-Range Planning Committee, Department of Physics and Astronomy: member, 1998–99 and fall 1999; Chair, spring 2000, 2000–01, 2001–02, 2002–03, 2003–04, and 2008–09

Graduate Committee (and graduate advisor), Department of Physics and Astronomy: member, 1999–2000, 2000–01, 2001–02, 2002–03, and 2003–04; Chair, 2004–05, 2005–06, and fall 2006

Webmaster, Department of Physics and Astronomy, 1997–98 and 1998–99

Graduate Examinations Committee, Department of Physics and Astronomy: member, 1994–95 and 1995–96

Ad Hoc Graduate Recruitment Committee, Department of Physics and Astronomy, 1997–98

Internal Steering Committee, Center for Advanced Studies, 1997–98

Experimental Optics Search Committee, Department of Physics and Astronomy, 1993–94
Faculty Search Committee, Department of Physics and Astronomy, 1994–95
Experimental AMO/Quantum Optics Search Committee, Department of Physics and Astronomy,
2004–05
Senior Tenure and Promotion Committee, College of Arts and Sciences: member, 2004–05; Chair,
2005–06
Faculty Committee on LANL/New-Mexico-Consortium Institute for Advanced Studies, 2006
Dean Search Committee, College of Arts and Sciences, 2006–07
Research Study Group (Provost-commissioned study of research administration at UNM), Chair,
spring-summer 2007

PROFESSIONAL SOCIETY MEMBERSHIPS

Fellow, American Physical Society
Fellow, American Association for the Advancement of Science
Member, American Association of Physics Teachers
Member, Sigma Xi

EXTERNAL SERVICE (since 2004)

Member, Program Committee, SPIE Conference on Fluctuations and Noise in Photonics and Quantum Optics, Maspalomas, Gran Canaria, 2004 May 26–28
Member, International Advisory Committee, Ninth International Conference on Squeezed States and Uncertainty Relations, Besançon, France, 2005 May 2–6
Member, Advisory Committee, Workshop on Quantum Information, Computation, and Logic, Perimeter Institute for Theoretical Physics, Waterloo, Ontario, 2005 July 17–22
Co-organizer, Workshop on Being Bayesian in a Quantum World, University of Konstanz, Konstanz, Germany, 2005 August 1–6
Member, Physics Division Review Committee, Los Alamos National Laboratory, 2001 and 2005
Member, National Science Foundation Physics Division Committee of Visitors, 2006 January 25–27
Member, Scientific Advisory Board, 5th Macroscopic Quantum Coherence and Computing Conference, Naples, Italy, 2006 June 12–16
Member, Program Committee for Annual Meeting of Division of Atomic, Molecular, and Optical Physics, American Physical Society, 2003–2006
Member, Technical Experts Panel for ARDA Quantum Computing Roadmap (lead member for section on quantum computing with neutral atoms), 2002–05
Member, International Advisory Committee, Asia-Pacific Conference on Quantum Information Science, Queensland, Australia, 2008 June 23–27
Chair-Elect, 2006, Chair, 2007, and Past Chair, 2008, Topical Group on Quantum Information, American Physical Society
Friend of American Physical Society, University of New Mexico, 2006–present

AWARDS, SCHOLARSHIPS, AND FELLOWSHIPS

Phi Beta Kappa, 1971
National Science Foundation Predoctoral Fellow, 72–10 to 75–9
Richard P. Feynman Fellow, Caltech, 76–10 to 77–9
First Öcsi Bácsi Fellow, Caltech, 1976–77
Einstein Prize for Laser Science, Society for Optical and Quantum Electronics, 1990
Excellence in Teaching Award, UNM Department of Physics and Astronomy, 1998–99, 1999–2000, and 2004–05

INVITED TALKS AND LECTURES (since 2004)

Tutorial instructor on quantum information and computation, DAMOP Annual Meeting, Tucson, 04–5
Invited presenter, Panel on the Future of Quantum Computing, Kavli Institute for Theoretical Physics 25th Anniversary Celebration on the Future of Physics, University of California, Santa Barbara, 04–10
Invited speaker, Santa Fe Institute Business Network Meeting, Santa Fe, 04–11

Invited speaker, DARPA Workshop on Quantum Algorithms, Entanglement, and Measurement, Scottsdale, Arizona, 04–11

Lecturer, SQuInT Biannual Summer Retreat, University of Southern California, 05–7

Invited speaker, Perimeter Institute Workshop on Quantum Information, Computation, and Logic, Waterloo, Ontario, 05–7

Invited speaker, Workshop on Being Bayesian in a Quantum World, University of Konstanz, Konstanz, Germany, 05–8

Invited speaker, Four Corners APS Meeting, Boulder, Colorado, 05–10

Invited speaker, Workshop on The Nature of Technology, Technology of Nature, Albuquerque, 05–11

Invited speaker, Workshop on Quantum Information and Coherence, sponsored by the U.S. National Academy’s Global Dialogues on Emerging Science and Technology (GDEST) and the Max Planck Institute for Quantum Optics, Munich, 05–12

Invited speaker, Ray Chiao Fest, 36th Winter Colloquium on The Physics of Quantum Electronics, Snowbird, Utah, 06–1

Lecturer, Santa Fe Institute Complex Systems Summer School, Santa Fe, 06–6

Tutorial lecturer and invited speaker, MaxEnt2006, 26th International Workshop on Bayesian Inference and Maximum Entropy Methods in Science and Engineering, CNRS, Paris, 06–7

Tutorial lecturer, Quantum Electronics and Laser Science Conference, Baltimore, 07–5

Invited speaker, Pegg Fest Symposium, Griffith University, Brisbane, 07–11

Invited speaker, Workshop on Quantum Information and Control in Queensland, Cairns, Queensland, 08–6

Invited speaker, Ninth International Conference on Quantum Communication, Measurement, and Computing, University of Calgary, 08–8

Invited speaker, APS March Meeting, Pittsburgh, 09–3

Invited speaker, 445th Wilhelm and Else Heraeus Seminar on Quantum Measurement and Metrology with Solid-State Devices, Physikzentrum Bad Honnef, Germany, 09–11

PUBLICATIONS

I. Book-length publications

A. PhD thesis

Theoretical Investigations of Experimental Gravitation, submitted to the California Institute of Technology on 1979 May 8.

B. Edited conference proceedings

1. *Quantum Communication, Computing, and Measurement*, edited by O. Hirota, A. S. Holevo, and C. M. Caves (Plenum, New York, 1997).

II. Technical articles

A. Technical articles in refereed journals

1. D. L. Lee, C. M. Caves, W.-T. Ni, and C. M. Will, “Theoretical frameworks for testing relativistic gravity. V. Post-Newtonian limit of Rosen’s theory,” *Astrophysical Journal* **206**, 555–558 (1976).
2. V. B. Braginsky, C. M. Caves, and K. S. Thorne, “Laboratory experiments to test relativistic gravity,” *Physical Review D* **15**, 2047–2068 (1977).
3. K. S. Thorne, R. W. P. Drever, C. M. Caves, M. Zimmermann, and V. D. Sandberg, “Quantum nondestruction measurements of harmonic oscillators,” *Physical Review Letters* **40**, 667–671 (1978).
4. C. M. Caves, “Microwave cavity gravitational radiation detectors,” *Physics Letters* **80B**, 323–326 (1979).
5. C. M. Caves, “Gravitational radiation and the ultimate speed in Rosen’s bimetric theory of gravity,” *Annals of Physics* **125**, 35–52 (1980).

6. C. M. Caves, K. S. Thorne, R. W. P. Drever, V. D. Sandberg, and M. Zimmermann, “On the measurement of a weak classical force coupled to a quantum-mechanical oscillator. I. Issues of principle,” *Reviews of Modern Physics* **52**, 341–392 (1980).
7. C. M. Caves, “Quantum-mechanical radiation-pressure fluctuations in an interferometer,” *Physical Review Letters* **45**, 75–79 (1980). Reprinted in *Nonclassical Effects in Quantum Optics*, edited by D. F. Walls and P. Meystre (American Institute of Physics, New York, 1991), pages 268–272.
8. C. M. Caves, “Quantum-mechanical noise in an interferometer,” *Physical Review D* **23**, 1693–1708 (1981). Reprinted in *Interferometry*, edited by P. Harihan (SPIE, Bellingham, Washington, 1991), pages 507–522; in *Photon Statistics and Coherence in Nonlinear Optics*, edited by J. Peřina (SPIE, Bellingham, Washington, 1991), pages 246–261; and in *Fundamentals of Quantum Optics*, edited by G. S. Agarwal (SPIE, Bellingham, Washington, 1994).
9. C. M. Caves, “Quantum limits on noise in linear amplifiers,” *Physical Review D* **26**, 1817–1839 (1982).
10. C. M. Caves and B. L. Schumaker, “New formalism for two-photon quantum optics. I. Quadrature phases and squeezed states,” *Physical Review A* **31**, 3068–3092 (1985).
11. B. L. Schumaker and C. M. Caves, “New formalism for two-photon quantum optics. II. Mathematical foundation and compact notation,” *Physical Review A* **31**, 3093–3111 (1985).
12. C. M. Caves, “Defense of the standard quantum limit for free-mass position,” *Physical Review Letters* **54**, 2465–2468 (1985).
13. C. M. Caves, “Quantum mechanics of measurements distributed in time. A path-integral formulation,” *Physical Review D* **33**, 1643–1665 (1986).
14. C. M. Caves, “Quantum mechanics of measurements distributed in time. II. Connections among formulations,” *Physical Review D* **35**, 1815–1830 (1987).
15. C. M. Caves and D. D. Crouch, “Quantum wideband traveling-wave analysis of a degenerate parametric amplifier,” *Journal of the Optical Society of America B* **4**, 1535–1545 (1987) [Erratum: **5**, 1343 (1988)].
16. C. M. Caves, “Squeezing more out of a laser,” *Optics Letters* **12**, 971–973 (1987).
17. C. M. Caves and G. J. Milburn, “Quantum-mechanical model for continuous position measurements,” *Physical Review A* **36**, 5543–5555 (1987).
18. S. L. Braunstein and C. M. Caves, “Quantum rules: An Effect can have more than one Operation,” *Foundations of Physics Letters* **1**, 3–12 (1988).
19. S. L. Braunstein and C. M. Caves, “Information-theoretic Bell inequalities,” *Physical Review Letters* **61**, 662–665 (1988) [Erratum: **63**, 1896 (1989)].
20. C. M. Caves, “Quantitative limits on the ability of a Maxwell demon to extract work from heat,” *Physical Review Letters* **64**, 2111–2114 (1990).
21. S. Song, C. M. Caves, and B. Yurke, “Generation of superpositions of classically distinguishable quantum states from optical back-action evasion,” *Physical Review A* **41**, 5261–5264 (1990).
22. S. L. Braunstein and C. M. Caves, “Wringing out better Bell inequalities,” *Annals of Physics* **202**, 22–56 (1990).
23. C. M. Caves, W. G. Unruh, and W. H. Zurek, “Comment on ‘Quantitative limits on the ability of a Maxwell demon to extract work from heat’,” *Physical Review Letters* **65**, 1387 (1990).
24. S. L. Braunstein and C. M. Caves, “Phase and homodyne statistics of generalized squeezed states,” *Physical Review A* **42**, 4115–4119 (1990).
25. C. Zhu and C. M. Caves, “Photocount distributions for continuous-wave squeezed light,” *Physical Review A* **42**, 6794–6804 (1990).
26. S. L. Braunstein, C. M. Caves, and G. J. Milburn, “Interpretation for a positive P representation,” *Physical Review A* **43**, 1153–1159 (1991).
27. C. M. Caves, C. Zhu, G. J. Milburn, and W. Schleich, “Photon statistics of two-mode squeezed states and interference in four-dimensional phase space,” *Physical Review A* **43**, 3854–3861 (1991).
28. S. L. Braunstein, A. S. Lane, and C. M. Caves, “Maximum-likelihood analysis of multiple quantum phase measurements,” *Physical Review Letters* **69**, 2153–2156 (1992).

29. R. Schack and C. M. Caves, “Information and entropy in the baker’s map,” *Physical Review Letters* **69**, 3413–3416 (1992).
30. A. S. Lane, S. L. Braunstein, and C. M. Caves, “Maximum-likelihood statistics of multiple quantum phase measurements,” *Physical Review A* **47**, 1667–1696 (1993).
31. C. M. Caves, “Information and entropy,” *Physical Review E* **47**, 4010–4017 (1993).
32. R. Schack and C. M. Caves, “Hypersensitivity to perturbations in the quantum baker’s map,” *Physical Review Letters* **71**, 525–528 (1993).
33. C. M. Caves and P. D. Drummond, “Quantum limits on bosonic communication rates,” *Reviews of Modern Physics* **66**, 481–537 (1994).
34. S. L. Braunstein and C. M. Caves, “Statistical distance and the geometry of quantum states,” *Physical Review Letters* **72**, 3439–3443 (1994).
35. R. Schack, G. M. D’Ariano, and C. M. Caves, “Hypersensitivity to perturbation in the quantum kicked top,” *Physical Review E* **50**, 972–987 (1994).
36. C. A. Fuchs and C. M. Caves, “Ensemble-dependent bounds for accessible information in quantum mechanics,” *Physical Review Letters* **73**, 3047–3050 (1994).
37. C. A. Fuchs and C. M. Caves, “Mathematical techniques for quantum communication theory,” *Open Systems and Information Dynamics* **3**, 345–356 (1995).
38. H. Barnum, C. M. Caves, C. A. Fuchs, R. Jozsa, and B. Schumacher, “Noncommuting mixed states cannot be broadcast,” *Physical Review Letters* **76**, 2818–2821 (1996).
39. S. L. Braunstein, C. M. Caves, and G. J. Milburn, “Generalized uncertainty relations: Theory, examples, and Lorentz invariance,” *Annals of Physics* **247**, 135–173 (1996).
40. R. Schack and C. M. Caves, “Information-theoretic characterization of quantum chaos,” *Physical Review E* **53**, 3257–3270 (1996).
41. R. Schack and C. M. Caves, “Chaos for Liouville probability densities,” *Physical Review E* **53**, 3387–3401 (1996).
42. M. A. Nielsen and C. M. Caves, “Reversible quantum operations and their application to teleportation,” *Physical Review A* **55**, 2547–2556 (1997).
43. C. M. Caves and R. Schack, “Unpredictability, information, and chaos,” *Complexity* **3**(1), 46–57 (1997).
44. M. A. Nielsen, C. M. Caves, B. Schumacher, and H. Barnum, “Information-theoretic approach to quantum error correction and reversible measurements,” *Proceedings of the Royal Society of London A: Mathematical, Physical and Engineering Sciences* **454**, 277–304 (1998).
45. G. K. Brennen, C. M. Caves, P. S. Jessen, and I. H. Deutsch, “Quantum logic gates in optical lattices,” *Physical Review Letters* **82**, 1060–1063 (1999).
46. S. L. Braunstein, C. M. Caves, R. Jozsa, N. Linden, S. Popescu, and R. Schack, “Separability of very noisy mixed states and implications for NMR quantum computing,” *Physical Review Letters* **83**, 1054–1057 (1999).
47. C. M. Caves, “Quantum error correction and reversible operations,” *Journal of Superconductivity* **12**, 707–718 (1999).
48. R. Schack and C. M. Caves, “Classical model for bulk-ensemble NMR quantum computation,” *Physical Review A* **60**, 4354–4362 (1999).
49. R. Schack and C. M. Caves, “Explicit product ensembles for separable quantum states,” *Journal of Modern Optics* **47**, 387–399 (2000).
50. R. Schack and C. M. Caves, “Shifts on a finite qubit string: A class of quantum baker’s maps,” *Applicable Algebra in Engineering, Communication and Computing* **10**, 305–310 (2000).
51. H. Barnum, C. M. Caves, J. Finkelstein, C. A. Fuchs, and R. Schack, “Quantum probability from decision theory?” *Proceedings of the Royal Society A* **456**, 1175–1182 (2000).
52. C. M. Caves, “Predicting future duration from present age: A critical assessment,” *Contemporary Physics* **41**, 143–153 (2000).

53. C. M. Caves and G. J. Milburn, “Qutrit entanglement,” *Optics Communications* **179**, 439–446 (2000); reprinted in *Ode to a Quantum Physicist: A Festschrift in Honor of Marlan O. Scully*, edited by W. P. Schleich, H. Walther, and W. E. Lamb (Elsevier, Amsterdam, 2000).
54. T. A. Brun, C. M. Caves, and R. Schack, “Entanglement purification of unknown quantum states,” *Physical Review A* **63**, 042309 (2001).
55. C. M. Caves, C. A. Fuchs, and P. Rungta, “Entanglement of formation of an arbitrary state of two rebits,” *Foundations of Physics Letters* **14**, 199–212 (2001).
56. R. Schack, T. A. Brun, and C. M. Caves, “Quantum Bayes rule,” *Physical Review A* **64**, 014305 (2001).
57. P. Rungta, V. Bužek, C. M. Caves, M. Hillery, and G. J. Milburn, “Universal state inversion and concurrence in arbitrary dimensions,” *Physical Review A* **64**, 042315 (2001).
58. H. Barnum, C. M. Caves, C. A. Fuchs, R. Jozsa, and B. Schumacher, “On quantum coding for ensembles of mixed states,” *Journal of Physics A* **34**, 6767–6785 (2001).
59. C. M. Caves, C. A. Fuchs, and R. Schack, “Quantum probabilities as Bayesian probabilities,” *Physical Review A* **65**, 022305 (2002).
60. N. C. Menicucci and C. M. Caves, “Local realistic model for the dynamics of bulk-ensemble NMR information processing,” *Physical Review Letters* **88**, 167901 (2002).
61. C. M. Caves, C. A. Fuchs, and R. Schack, “Unknown quantum states: The quantum de Finetti representation,” *Journal of Mathematical Physics* **43**, 4537–4559 (2002) [Erratum: **49**, 19902 (2008)].
62. R. Blume-Kohout, C. M. Caves, and I. H. Deutsch, “Climbing Mount Scalable: Physical-resource requirements for a scalable quantum computer,” *Foundations of Physics* **32**, 1641–1670 (2002).
63. C. M. Caves, C. A. Fuchs, and R. Schack, “Conditions for compatibility of quantum-state assignments,” *Physical Review A* **66**, 062111 (2002).
64. P. Rungta and C. M. Caves, “Concurrence-based entanglement measures for isotropic states,” *Physical Review A* **67**, 012307 (2003).
65. A. J. Scott and C. M. Caves, “Entangling power of the quantum baker’s map,” *Journal of Physics A* **36**, 9553–9576 (2003).
66. C. M. Caves, C. A. Fuchs, K. K. Manne, and J. M. Renes, “Gleason-type derivations of the quantum probability rule for generalized measurements,” *Foundations of Physics* **34**, 193–209 (2004).
67. J. M. Renes, R. Blume-Kohout, A. J. Scott, and C. M. Caves, “Symmetric informationally complete quantum measurements,” *Journal of Mathematical Physics* **45**, 2171–2180 (2004).
68. C. M. Caves and K. Wódkiewicz, “Classical phase-space descriptions of continuous-variable teleportation,” *Physical Review Letters* **69**, 040506 (2004).
69. C. M. Caves, I. H. Deutsch, and R. Blume-Kohout, “Physical-resource requirements and the power of quantum computation,” *Journal of Optics B: Quantum and Semiclassical Optics* **6**, S801–S806 (2004).
70. C. M. Caves and K. Wódkiewicz, “Fidelity of Gaussian channels,” *Open Systems and Information Dynamics* **11**, 309–323 (2004).
71. C. M. Caves and R. Schack, “Properties of the frequency operator do not imply the quantum probability postulate,” *Annals of Physics* **315**, 123–146 (2005) [Corrigendum: **321**, 504–505 (2006)].
72. T. E. Tessier, C. M. Caves, I. H. Deutsch, B. Eastin, and D. Bacon, “Optimal classical-communication-assisted local model of n -qubit Greenberger-Horne-Zeilinger correlations,” *Physical Review A* **72**, 032305 (2005).
73. A. Datta, S. T. Flammia, and C. M. Caves, “Entanglement and the power of one qubit,” *Physical Review A* **72**, 042316 (2005).
74. S. T. Flammia, A. Silberfarb, and C. M. Caves, “Minimal informationally complete measurements for pure states,” *Foundations of Physics* **35**, 1985–2006 (2005).
75. A. J. Scott, T. A. Brun, C. M. Caves, and R. Schack, “Hypersensitivity and chaos signatures in the quantum baker’s maps,” *Journal of Physics A* **39**, 13405–13433 (2006).
76. S. Boixo, C. M. Caves, A. Datta, and A. Shaji, “On decoherence in quantum clock synchronization,” *Laser Physics* **16**, 1525–1532 (2006).

77. J. Barrett, C. M. Caves, B. Eastin, M. B. Elliott, and S. Pironio, “Modeling Pauli measurements on graph states with nearest-neighbor classical communication,” *Physical Review A* **75**, 012103 (2007).
78. S. Boixo, S. T. Flammia, C. M. Caves, and JM Geremia, “Generalized limits for single-parameter quantum estimation,” *Physical Review Letters* **98**, 090401 (2007).
79. C. M. Caves, C. A. Fuchs, and R. Schack, “Subjective probability and quantum certainty,” *Studies in History and Philosophy of Modern Physics* **38**, 255–274 (2007).
80. A. Datta, S. T. Flammia, A. Shaji, and C. M. Caves, “Constrained bounds on measures of entanglement,” *Physical Review A* **75**, 062117 (2007).
81. A. Shaji and C. M. Caves, “Qubit metrology and decoherence,” *Physical Review A* **76**, 032111 (2007).
82. S. Boixo, A. Datta, S. T. Flammia, A. Shaji, E. Bagan, and C. M. Caves, “Quantum-limited metrology with product states,” *Physical Review A* **77**, 012317 (2008).
83. A. Datta, A. Shaji, and C. M. Caves, “Quantum discord and the power of one qubit,” *Physical Review Letters* **100**, 050502 (2008).
84. K. K. Manne and C. M. Caves, “Entanglement of formation of rotationally symmetric states,” *Quantum Information and Computation* **8**, 295–310 (2008).
85. M. B. Elliott, B. Eastin, and C. M. Caves, “Graphical description of the action of Clifford operators on stabilizer states,” *Physical Review A* **77**, 042307 (2008).
86. S. Boixo, A. Datta, M. J. Davis, S. T. Flammia, A. Shaji, and C. M. Caves, “Quantum metrology: dynamics vs. entanglement,” *Physical Review Letters* **101**, 040403 (2008).
87. A. J. Scott and C. M. Caves, “Teleportation fidelity as a probe of sub-Planck phase-space structure,” *Annals of Physics* **323**, 2685–2708 (2008).
88. M. J. Woolley, G. J. Milburn, and C. M. Caves, “Nonlinear quantum metrology using coupled nanomechanical resonators,” *New Journal of Physics* **10**, 125018 (2008).
89. M. B. Elliott, B. Eastin, and C. M. Caves, “Graphical description of Pauli measurements on stabilizer states,” submitted to *Journal of Physics A*, arXiv:0806.2651 [quant-ph].
90. C. M. Caves, “Predicting future duration from present age: Revisiting a critical assessment of Gott’s rule,” arXiv:0806.3538 [astro-ph].

B. Other technical articles

1. V. B. Braginsky, C. M. Caves, and K. S. Thorne, “Laboratory experiments to test general relativity,” in *Experimental Gravitation*, edited by B. Bertotti (Accademia Nazionale dei Lincei, Rome, 1977), pages 49–72.
2. K. S. Thorne, C. M. Caves, V. D. Sandberg, M. Zimmermann, and R. W. P. Drever, “The quantum limit for gravitational-wave detectors and methods of circumventing it,” in *Sources of Gravitational Radiation*, edited by L. Smarr (Cambridge University Press, Cambridge, England, 1979), pages 49–68.
3. C. M. Caves, “Quantum nondemolition measurements,” in *Quantum Optics, Experimental Gravitation, and Measurement Theory*, edited by P. Meystre and M. O. Scully (Plenum, New York, 1983), pages 567–626.
4. B. L. Schumaker and C. M. Caves, “A new formalism for two-photon quantum optics,” in *Coherence and Quantum Optics V*, edited by L. Mandel and E. Wolf (Plenum, New York, 1984), pages 743–750.
5. C. M. Caves, “Quantum nondemolition measurements,” in *Foundations of Quantum Mechanics*, edited by S. Kamefuchi *et al.* (Physical Society of Japan, Tokyo, 1984), pages 195–205.
6. C. M. Caves, “Amplitude and phase in quantum optics,” in *Coherence, Cooperation and Fluctuations*, edited by F. Haake, L. M. Narducci, and D. F. Walls (Cambridge University Press, Cambridge, England, 1986), pages 192–205.
7. C. M. Caves and B. L. Schumaker, “Broadband squeezing,” in *Quantum Optics IV*, edited by J. D. Harvey and D. F. Walls (Springer, Berlin, 1986), pages 20–30.
8. C. M. Caves, “Measurements distributed in time,” in *Quantum Measurement and Chaos*, edited by E. R. Pike and S. Sarkar (Plenum, New York, 1987), pages 195–207.

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