



Stephen Hawking Brief Biography

Professor Stephen William Hawking was born on 8th January 1942 (exactly 300 years after the death of Galileo) in Oxford, England. His parents' house was in north London but during the second world war Oxford was considered a safer place to have babies. When he was eight his family moved to St. Albans, a town about 20 miles north of London. At the age of eleven, Stephen went to St. Albans School and then on to University College, Oxford (1952); his father's old college. Stephen wanted to study mathematics although his father would have preferred medicine. Mathematics was not available at University College, so he pursued physics instead. After three years and not very much work, he was awarded a first class honours degree in natural science.

In October 1962, Stephen arrived at the [Department of Applied Mathematics and Theoretical Physics \(DAMTP\)](#) at the University of Cambridge to do research in cosmology, there being no-one working in that area in Oxford at the time. His supervisor was Dennis Sciama, although he had hoped to get Fred Hoyle who was working in Cambridge. After gaining his PhD (1965) with his thesis titled '[Properties of Expanding Universes](#)', he became, first, a research fellow (1965) then Fellow for Distinction in Science (1969) at Gonville & Caius college. In 1966 he won the Adams Prize for his essay 'Singularities and the Geometry of Space-time'. Stephen moved to the Institute of Astronomy (1968), later moving back to DAMTP (1973), employed as a research assistant, and published his first academic book, *The Large Scale Structure of Space-Time*, with George Ellis. During the next few years, Stephen was elected a Fellow of the Royal Society (1974) and Sherman Fairchild Distinguished Scholar at the California Institute of Technology (1974). He became a Reader in Gravitational Physics at DAMTP (1975), progressing to Professor of Gravitational Physics (1977). He then held the position of Lucasian Professor of Mathematics (1979-2009). The chair was founded in 1663 with money left in the will of the Reverend Henry Lucas who had been the Member of Parliament for the University. It was first held by Isaac Barrow and then in 1669 by Isaac Newton. Stephen is currently the Dennis Stanton Avery and Sally Tsui Wong-Avery Director of Research at DAMTP.

Professor Stephen Hawking has worked on the basic laws which govern the universe. With Roger Penrose he showed that Einstein's general theory of relativity implied space and time would have a beginning in the Big Bang and an end in black holes (1970). These results indicated that it was necessary to unify general relativity with quantum theory, the other great scientific development of the first half of the 20th century. One consequence of such a unification that he discovered was that black holes should not be completely black, but rather should emit 'Hawking' radiation and eventually evaporate and disappear (1974). Another conjecture is that the universe has no edge or boundary in imaginary time. This would imply

that the way the universe began was completely determined by the laws of science. Recently Stephen has been working with colleagues on a possible resolution to the black hole information paradox, where debate centres around the conservation of information.

His many publications include *The Large Scale Structure of Spacetime* with G F R Ellis, *General Relativity: An Einstein Centenary Survey*, with W Israel, and *300 Years of Gravitation*, with W Israel. Among the popular books Stephen Hawking has published are his best seller *A Brief History of Time*, *Black Holes and Baby Universes and Other Essays*, *The Universe in a Nutshell*, *The Grand Design* and *My Brief History*.

Professor Stephen Hawking has thirteen honorary degrees. He was awarded CBE (1982), Companion of Honour (1989) and the Presidential Medal of Freedom (2009). He is the recipient of many awards, medals and prizes, most notably the Fundamental Physics prize (2013), Copley Medal (2006) and the Wolf Foundation prize (1988). He is a Fellow of the Royal Society and a member of the US National Academy of Sciences and the Pontifical Academy of Sciences.

In 1963 Stephen was diagnosed with ALS, a form of Motor Neurone Disease, shortly after his 21st birthday. In spite of being wheelchair-bound and dependent on a computerised voice system for communication Stephen continues to combine family life (he has three children and three grandchildren) with his research into theoretical physics, in addition to an extensive programme of travel and public lectures. He still hopes to make it into space one day.

Public Lectures

Included below are a selection of Professor Hawking's public lectures.

[Into a Black Hole](#) 2008

Is it possible to fall in a black hole, and come out in another universe? Can you escape from a black hole once you fall inside? In this lecture I talk about some of the things I've found out about black holes.

[The Origin of the Universe](#) 2005

Why are we here? Where did we come from? The answer generally given was that humans were of comparatively recent origin, because it must have been obvious, even at early times, that the human race was improving in knowledge and technology. So it can't have been around that long, or it would have progressed even more.

[Godel and the End of Physics](#) 2002

In this talk, I want to ask how far can we go in our search for understanding and knowledge.

Will we ever find a complete form of the laws of nature? By a complete form, I mean a set of rules that in principle at least enable us to predict the future to an arbitrary accuracy, knowing the state of the universe at one time. A qualitative understanding of the laws has been the aim of philosophers and scientists, from Aristotle onwards.

Space and Time Warps 1999

In science fiction, space and time warps are a commonplace. They are used for rapid journeys around the galaxy, or for travel through time. But today's science fiction, is often tomorrow's science fact. So what are the chances for space and time warps.

Does God Play Dice 1999

This lecture is about whether we can predict the future, or whether it is arbitrary and random. In ancient times, the world must have seemed pretty arbitrary. Disasters such as floods or diseases must have seemed to happen without warning or apparent reason. Primitive people attributed such natural phenomena, to a pantheon of gods and goddesses, who behaved in a capricious and whimsical way. There was no way to predict what they would do, and the only hope was to win favour by gifts or actions.

The Beginning of Time 1996

In this lecture, I would like to discuss whether time itself has a beginning, and whether it will have an end. All the evidence seems to indicate, that the universe has not existed forever, but that it had a beginning, about 15 billion years ago. This is probably the most remarkable discovery of modern cosmology. Yet it is now taken for granted. We are not yet certain whether the universe will have an end.

Life in the Universe 1996

In this talk, I would like to speculate a little, on the development of life in the universe, and in particular, the development of intelligent life. I shall take this to include the human race, even though much of its behaviour through out history, has been pretty stupid, and not calculated to aid the survi

Publications

- **A Smooth Exit from Eternal Inflation.** S.W. Hawking, T. Hertog. 24 Jul 2017. 14pp, [arXiv:1707.07702](https://arxiv.org/abs/1707.07702) [hep-th]
- **The Conformal BMS Group.** S.J. Haco, S.W.Hawking, M.J.Perry, J.L.Bourjaily. 27 Jan 2017. 16pp, [arXiv:1701.08110](https://arxiv.org/abs/1701.08110) [hep-th]
- **Superrotation Charge and Supertranslation Hair on Black Holes.** S.W. Hawking, M.J. Perry, A. Strominger. High Energ. Phys. (2017) 2017: 161. DOI: [10.1007/JHEP05\(2017\)161](https://doi.org/10.1007/JHEP05(2017)161).

- [**Black holes: The Reith Lectures.**](#) S.W. Hawking, May 2016, ISBN-13: 978-0857503572
- [**George and the Blue Moon.**](#) L. Hawking, S.W.Hawking, Mar 2016, ISBN-13: 978-0857533272
- [**Soft Hair on Black Holes.**](#) S.W. Hawking, M.J. Perry, A. Strominger. Jan 5, 2016. 9pp. Published in Phys.Rev.Lett. 116 (2016) no.23, 231301, [arXiv:1601.00921](#), DOI: [10.1103/PhysRevLett.116.231301](#)
- [**The Information Paradox for Black Holes**](#), S.W. Hawking. Sep 3, 2015. 3 pp. DAMTP-2015-49
e-Print: [arXiv:1509.01147](#) [hep-th]
- [**George and the Unbreakable Code.**](#) L. Hawking. S.W.Hawking. Jun 2014. ISBN-13: 978-0857533258
- [**Information Preservation and Weather Forecasting for Black Holes.**](#) S.W. Hawking. Jan 2014. [arXiv:1401.5761v1](#) [hep-th]
- [**My Brief History.**](#) S.W. Hawking, Sep 2013. 144 pp ISBN-13: 978-0345535283
- [**Vector Fields in Holographic Cosmology.**](#) James B.Hartle. S.W. Hawking, Thomas Hertog. May 2013. 17 pp. [arXiv:1305.7190v1](#) [hep-th], DOI: [10.1007/JHEP11\(2013\)201](#)
- [**George and the Big Bang.**](#) L. Hawking. S.W.Hawking. Aug 2012. ISBN-13: 978-1442440050
- [**Quantum Probabilities for Inflation from Holography.**](#) James B.Hartle. S.W. Hawking, Thomas Hertog. Jul 2012. [arXiv:1207.6653v3](#) [hep-th], DOI: [10.1088/1475-7516/2014/01/015](#)
- [**Accelerated Expansion from Negative Lambda.**](#) James B. Hartle (UC, Santa Barbara), S.W. Hawking (Cambridge U., DAMTP), Thomas Hertog (Leuven U. & Intl. Solvay Inst., Brussels). May 2012. 28 pp. [arXiv:1205.3807v3](#) [hep-th]
- [**George's Cosmic Treasure Hunt.**](#) L. Hawking. S.W.Hawking. May 2011. ISBN-13: 978-1442421752
- [**The dreams that stuff is made of: The most astounding papers of quantum physics - and how they shook the scientific world.**](#) Stephen Hawking, (ed.) (Cambridge U., DAMTP). 2011. 1071 pp. Published in Philadelphia, USA: Running Pr. (2011) 1071 p. ISBN-13: 978-0762434343

- **[Local Observation in Eternal inflation.](#)** James Hartle (UC, Santa Barbara), S.W. Hawking (Cambridge U., DAMTP), Thomas Hertog (APC, Paris & Intl. Solvay Inst., Brussels). Sep 2010. 4 pp. *Published in Phys.Rev.Lett. 106 (2011) 141302.* [arXiv:1009.2525v2](#) [hep-th], DOI: [10.1103/PhysRevLett.106.141302](#)
- **[The Grand Design.](#)** S.W.Hawking and L. Mlodinow (Sep 2010), ISBN-13: 978-0553805376
- **[The No-Boundary Measure in the Regime of Eternal Inflation.](#)** James Hartle (UC, Santa Barbara), S.W. Hawking (Cambridge U., DAMTP), Thomas Hertog (APC, Paris & Intl. Solvay Inst., Brussels). Jan 2010. 29 pp. *Published in Phys.Rev. D82 (2010) 063510.* [arXiv:1001.0262v1](#) [hep-th], DOI: [10.1103/PhysRevD.82.063510](#)
- **[George's Secret Key to the Universe.](#)** L. Hawking. S.W.Hawking. May 2009. ISBN-13: 978-1416985846
- **[Why did the Universe Inflate?](#)** S.W. Hawking (Cambridge U., DAMTP). 2009. 7 pp. DOI: [10.1007/978-0-387-87499-9_10](#)
- **[The Classical Universes of the No-Boundary Quantum State.](#)** James B. Hartle (UC, Santa Barbara), S.W. Hawking (Cambridge U., DAMTP), Thomas Hertog (APC, Paris & Intl. Solvay Inst., Brussels). Mar 2008. 46 pp. [arXiv:0803.1663](#) [hep-th], DOI: [10.1103/PhysRevD.77.123537](#)
- **[No-Boundary Measure of the Universe.](#)** James B. Hartle (UC, Santa Barbara), S.W. Hawking (Cambridge U., DAMTP), Thomas Hertog (APC, Paris & Intl. Solvay Inst., Brussels). Nov 2007. 4 pp. *Published in Phys.Rev.Lett. 100 (2008) 201301.* [arXiv:0711.4630](#) [hep-th], DOI: [10.1103/PhysRevLett.100.201301](#)
- **[Volume Weighting in the No Boundary Proposal.](#)** S.W. Hawking. Oct 2007. 7 pp. [arXiv:0710.2029](#) [hep-th]
- **[God created the Integers.](#)** S.W.Hawking. Oct 2007. ISBN-13: 978-0762430048
- **[The measure of the universe.](#)** S.W. Hawking (Cambridge U., DAMTP). 2007. 6 pp. *Published in AIP Conf.Proc. 957 (2007) 79-84,* DOI: [10.1063/1.2823830](#)
- **[Populating the landscape: A Top down approach.](#)** S.W. Hawking (Cambridge U., DAMTP), Thomas Hertog (CERN). CERN-PH-TH-2006-022. Feb 2006. 22 pp. *Published in Phys.Rev. D73 (2006) 123527.* [arXiv:hep-th/0602091](#), DOI: [10.1103/PhysRevD.73.123527](#)
- **[Information loss in black holes.](#)** S.W. Hawking (Cambridge U., DAMTP). DAMTP-2005-66. Jul 2005. 5 pp. *Published in Phys.Rev. D72 (2005) 084013.* [arXiv:hep-th/0507171](#), DOI: [10.1103/PhysRevD.72.084013](#)
- **[A non singular universe.](#)** S. Hawking (Cambridge U., DAMTP). 2005. 2 pp. *Published in Phys.Scripta T117 (2005) 49-50*
- **[A briefer history of time.](#)** S. Hawking (Cambridge U., DAMTP), L. Mlodinow. 2005. 189 pp. *Published in Reinbek, Germany: Rowohlt (2005) 189 p.* ISBN-13: 978-0553385465

- **Black holes and the information paradox.** S. Hawking (Cambridge U., DAMTP). Jul 2004. 7 pp. Prepared for Conference: [C04-07-18](#), p.56-62 [Proceedings](#)
- **The grand Stephen Hawking reader: Life and work.** H. Mania, (ed.), S. Hawking. 2004. 291 pp. *Published in (rororo. 61655)*
- **[Cosmology from the top down.](#)** Stephen W. Hawking (Cambridge U., DAMTP). DAVISINFLATION-2003-PELLY. May 2003. *Published in In *Carr, Bernard (ed.): Universe or multiverse?** 91-98. [arXiv:astro-ph/0305562](#)
- **[On the Shoulders of Giants.](#)** N. Copernicus, J. Kepler, G. Galalei, I. Newton, A. Einstein (Author), S. Hawking. Dec 2003. ISBN-13: 978-0762416981
- **The illustrated theory of everything: The origin and fate of the universe.** S.W. Hawking (Cambridge U., DAMTP). 2003. 119 pp. *Published in Beverly Hills, USA: New Millennium Pr. (2003) 119 p*
- **Brane new world.** Stephen Hawking (Cambridge U., DAMTP). Aug 2002. 7 pp. *Published in Conf.Proc. C0208124 (2002) 1-7*
- **[Why does inflation start at the top of the hill?](#)** S.W. Hawking, Thomas Hertog (Cambridge U., DAMTP). Apr 2002. 21 pp. *Published in Phys.Rev. D66 (2002) 123509.* [arXiv:hep-th/0204212](#), DOI: [10.1103/PhysRevD.66.123509](#)
- **Sixty years in a nutshell.** S. Hawking (Newton Inst. Math. Sci., Cambridge). Jan 2002. *Prepared for Workshop on Conference on the Future of Conference: C02-01-07.7*
- **Chronology protection: Making the world safe for historians.** S.W. Hawking. 2002. *Published in In *Hawking, S.W. et al.: The future of spacetime** 87-108
- **The Future of space-time.** S.W. Hawking, K.S. Thorne, I. Novikov, T. Ferris, A. Lightman, R. Price. 2002. 220 pp. *Published in New York, USA: Norton (2002) 220 p*
- **Why does inflation start at the top of the hill?** S.W. Hawking (Cambridge U., DAMTP). Nov 2001. *Prepared for Conference: C01-11-13.1*
- **[Living with ghosts.](#)** S.W. Hawking, Thomas Hertog (Cambridge U., DAMTP). Jul 2001. 13 pp. *Published in Phys.Rev. D65 (2002) 103515.* [arXiv:hep-th/0107088](#), DOI: [10.1103/PhysRevD.65.103515](#)
- **[The universe in a nutshell.](#)** S. Hawking (Cambridge U., DAMTP). 2001. 224 pp. ISBN-13: 978-0553802023
- **[Trace anomaly driven inflation.](#)** S.W. Hawking, T. Hertog (Cambridge U., DAMTP), H.S. Reall (Queen Mary, U. of London). DAMTP-2000-92, QMW-PH-00-10. Oct 2000. 40 pp. *Published in Phys.Rev. D63 (2001) 083504.* [arXiv:hep-th/0010232](#), DOI: [10.1103/PhysRevD.63.083504](#)
- **Large N cosmology.** S.W. Hawking (Cambridge U., DAMTP). Sep 2000. *Prepared for Conference: C00-09-04.4*
- **[Brane new world.](#)** S.W. Hawking, T. Hertog, H.S. Reall (Cambridge U., DAMTP). DAMTP-2000-25. Mar 2000. 28 pp. *Published in Phys.Rev. D62 (2000) 043501.* [arXiv:hep-th/0003052](#), DOI: [10.1103/PhysRevD.62.043501](#)

- **Gravitational waves in open de Sitter space.** S.W. Hawking, Thomas Hertog, Neil Turok (Cambridge U., DAMTP). Mar 2000. 17 pp. *Published in Phys.Rev. D62 (2000) 063502.* [arXiv:hep-th/0003016](https://arxiv.org/abs/hep-th/0003016), DOI: [10.1103/PhysRevD.62.063502](https://doi.org/10.1103/PhysRevD.62.063502)
- **de Sitter entropy, quantum entanglement and AdS / CFT.** Stephen Hawking (Cambridge U., DAMTP), Juan Martin Maldacena, Andrew Strominger (Harvard U.). Feb 2000. 14 pp. *Published in JHEP 0105 (2001) 001.* [arXiv:hep-th/0002145](https://arxiv.org/abs/hep-th/0002145), DOI: [10.1088/1126-6708/2001/05/001](https://doi.org/10.1088/1126-6708/2001/05/001)
- **Stability of AdS and phase transitions.** S.W. Hawking (Cambridge U., DAMTP). 2000. *Published in Class.Quant.Grav. 17 (2000) 1093-1099,* DOI: [10.1088/0264-9381/17/5/318](https://doi.org/10.1088/0264-9381/17/5/318)
- **Brane world black holes.** A. Chamblin, S.W. Hawking, H.S. Reall (Cambridge U., DAMTP). DAMTP-1999-133. Sep 1999. 9 pp. *Published in Phys.Rev. D61 (2000) 065007.* [arXiv:hep-th/9909205](https://arxiv.org/abs/hep-th/9909205), DOI: [10.1103/PhysRevD.61.065007](https://doi.org/10.1103/PhysRevD.61.065007)
- **Charged and rotating AdS black holes and their CFT duals.** S.W. Hawking, H.S. Reall (Cambridge U., DAMTP). DAMTP-R-99-108. Aug 1999. 18 pp. *Published in Phys.Rev. D61 (2000) 024014.* [arXiv:hep-th/9908109](https://arxiv.org/abs/hep-th/9908109), DOI: [10.1103/PhysRevD.61.024014](https://doi.org/10.1103/PhysRevD.61.024014)
- **Primordial black holes: Pair creation, Lorentzian condition, and evaporation.** R. Bousso (Stanford U., Phys. Dept.), S.W. Hawking (Cambridge U.). 1999. *Published in Int.J.Theor.Phys. 38 (1999) 1227-*, DOI:[10.1023/A:1026618832525](https://doi.org/10.1023/A:1026618832525)
- **A debate on open inflation.** S.W. Hawking (Cambridge U., DAMTP). Nov 1998. *Published in AIP Conf.Proc. 478 (1999) 15-22*
- **Rotation and the AdS / CFT correspondence.** S.W. Hawking, C.J. Hunter, Marika Taylor (Cambridge U., DAMTP). Nov 1998. 24 pp. *Published in Phys.Rev. D59 (1999) 064005.* [arXiv:hep-th/9811056](https://arxiv.org/abs/hep-th/9811056), DOI: [10.1103/PhysRevD.59.064005](https://doi.org/10.1103/PhysRevD.59.064005)
- **Nut charge, anti-de Sitter space and entropy.** S.W. Hawking, C.J. Hunter (Cambridge U.), Don N. Page (Alberta U.). DAMTP-98-122. Sep 1998. 13 pp. *Published in Phys.Rev. D59 (1999) 044033.* [arXiv:hep-th/9809035](https://arxiv.org/abs/hep-th/9809035), DOI: [10.1103/PhysRevD.59.044033](https://doi.org/10.1103/PhysRevD.59.044033)
- **Gravitational entropy and global structure.** S.W. Hawking, C.J. Hunter (Cambridge U.). DAMTP-98-104. Aug 1998. 19 pp. *Published in Phys.Rev. D59 (1999) 044025.* [arXiv:hep-th/9808085](https://arxiv.org/abs/hep-th/9808085), DOI: [10.1103/PhysRevD.59.044025](https://doi.org/10.1103/PhysRevD.59.044025)
- **Open inflation.** S.W. Hawking (CAMBRIDGE U.). Aug 1998. Prepared for 2nd Samos Meeting on Cosmology, Geometry and Re Conference: C98-08-31.4
- **Lorentzian condition in quantum gravity.** Raphael Bousso (Stanford U., Phys. Dept.), Stephen W. Hawking (Cambridge U.). SU-ITP-98-26, DAMTP-98-87. Jul 1998. 14 pp. *Published in Phys.Rev. D59 (1999) 103501, Erratum-ibid. D60 (1999) 109903.* [arXiv:hep-th/9807148](https://arxiv.org/abs/hep-th/9807148), DOI: [10.1103/PhysRevD.60.109903](https://doi.org/10.1103/PhysRevD.60.109903), [10.1103/PhysRevD.59.103501](https://doi.org/10.1103/PhysRevD.59.103501)
- **Inflation, singular instantons and eleven-dimensional cosmology.** S.W. Hawking, Harvey S. Reall (Cambridge U.). DAMTP-98-85. Jul 1998. 19 pp. *Published in Phys.Rev. D59 (1999) 023502.* [arXiv:hep-th/9807100](https://arxiv.org/abs/hep-th/9807100), DOI: [10.1103/PhysRevD.59.023502](https://doi.org/10.1103/PhysRevD.59.023502)

- **[Open inflation, the four form and the cosmological constant.](#)** Neil Turok, S.W. Hawking (Cambridge U.). Mar 1998. 11 pp. *Published in Phys.Lett. B432 (1998) 271-278.* [arXiv:hep-th/9803156](#), DOI: [10.1016/S0370-2693\(98\)00651-0](#)
- **[Open inflation without false vacua.](#)** S.W. Hawking, Neil Turok (Cambridge U.). Feb 1998. 10 pp. *Published in Phys.Lett. B425 (1998) 25-32.* [arXiv:hep-th/9802030](#), DOI: [10.1016/S0370-2693\(98\)00234-2](#)
- **[Comment on 'quantum creation of an open universe', by Andrei Linde.](#)** S.W. Hawking, Neil Turok (Cambridge U.). Feb 1998. 4 pp. [arXiv:gr-qc/9802062](#)
- **[Is information lost in black holes?.](#)** S.W. Hawking (Cambridge U.). 1998. *Published in In *Wald, R.M. (ed.): Black holes and relativistic stars* 221-240*
- **[Bulk charges in eleven-dimensions.](#)** S.W. Hawking, Marika Taylor (Cambridge U.). DAMTP-R-97-52. Nov 1997. 26 pp. *Published in Phys.Rev. D58 (1998) 025006.* [arXiv:hep-th/9711042](#), DOI: [10.1103/PhysRevD.58.025006](#)
- **[Evaporation of cosmological black holes.](#)** R. Bousso (Stanford U., Phys. Dept.), S.W. Hawking (Cambridge U., DAMTP). Nov 1997. 14 pp. *Prepared for Conference: C97-11-11.1*
- **[\(Anti\)evaporation of Schwarzschild-de Sitter black holes.](#)** Raphael Bousso, Stephen W. Hawking (Cambridge U.). DAMTP-R-97-26. Sep 1997. 16 pp. *Published in Phys.Rev. D57 (1998) 2436-2442.* [arXiv:hep-th/9709224](#), DOI: [10.1103/PhysRevD.57.2436](#)
- **[Models for chronology selection.](#)** M.J. Cassidy, S.W. Hawking (Cambridge U.). DAMTP-R-97-47. Sep 1997. 20 pp. *Published in Phys.Rev. D57 (1998) 2372-2380.* [arXiv:hep-th/9709066](#), DOI: [10.1103/PhysRevD.57.2372](#)
- **[Evaporation of primordial black holes.](#)** S.W. Hawking (Cambridge U., DAMTP). Aug 1997. *Prepared for 6th Conference on Quantum Mechanics of Conference: C97-11-11.1*
- **[Trace anomaly of dilaton coupled scalars in two-dimensions.](#)** Raphael Bousso, Stephen W. Hawking (Cambridge U.). DAMTP-R-97-25. May 1997. 11 pp. *Published in Phys.Rev. D56 (1997) 7788-7791.* [arXiv:hep-th/9705236](#), DOI: [10.1103/PhysRevD.56.7788](#)
- **[Loss of quantum coherence through scattering off virtual black holes.](#)** S.W. Hawking (Cambridge U.), Simon F. Ross (UC, Santa Barbara). DAMTP-R-97-21, UCSB-TH-97-08. May 1997. 29 pp. *Published in Phys.Rev. D56 (1997) 6403-6415.* [arXiv:hep-th/9705147](#), DOI: [10.1103/PhysRevD.56.6403](#)
- **[Evolution of near extremal black holes.](#)** S.W. Hawking, Marika Taylor (Cambridge U.). DAMTP-R-96-56. Feb 1997. 25 pp. *Published in Phys.Rev. D55 (1997) 7680-7692.* [arXiv:hep-th/9702045](#), DOI: [10.1103/PhysRevD.55.7680](#)
- **[Evaporation of cosmological black holes.](#)** R. Bousso (Stanford U., Phys. Dept.), S.W. Hawking (Cambridge U., DAMTP). 1997. *Published in In *Ambleside 1997, Particle physics and the early universe* 481-494*
- **[The Nature of space and time.](#)** S.W. Hawking, R. Penrose. Jul 1996. *Published in Sci.Am. 275 (1996) 44-49*
- **[Pair creation of black holes during inflation.](#)** Raphael Bousso, Stephen W. Hawking (Cambridge U.). DAMTP-R-96-33. Jun 1996. 29 pp. *Published in Phys.Rev. D54 (1996) 6312-6322*

- **Loss of information in black holes.** S. Hawking (Cambridge U., DAMTP). Jun 1996. Prepared for Conference on Geometric Issues in Foundations Conference: C96-06-25.2
- **Primordial black holes: Tunneling versus no boundary proposal.** Raphael Bousso, Stephen W. Hawking (Cambridge U., DAMTP). DAMTP-R-96-34, C96-05-25. May 1996. 14 pp. Published in *Grav.Cosmol.Suppl. 4 (1998) 28-37*. [arXiv:gr-qc/9608009](https://arxiv.org/abs/gr-qc/9608009)
- **Pair creation and evolution of black holes in inflation.** Raphael Bousso, Stephen W. Hawking (Cambridge U.). DAMTP-R-96-35, C96-05-26. May 1996. 8 pp. Published in *Helv.Phys.Acta 69 (1996) 261-264*. [arXiv:gr-qc/9608008](https://arxiv.org/abs/gr-qc/9608008), DOI: [10.1103/PhysRevD.54.6312](https://doi.org/10.1103/PhysRevD.54.6312)
- **The Gravitational Hamiltonian in the presence of nonorthogonal boundaries.** S.W. Hawking, C.J. Hunter (Cambridge U.). DAMTP-R-96-9. Mar 1996. 19 pp. Published in *Class.Quant.Grav. 13 (1996) 2735-2752*. [arXiv:gr-qc/9603050](https://arxiv.org/abs/gr-qc/9603050), DOI: [10.1088/0264-9381/13/10/012](https://doi.org/10.1088/0264-9381/13/10/012)
- **Black holes in inflation.** R. Bousso, S.W. Hawking (Cambridge U., DAMTP). 1996. Published in *Nucl.Phys.Proc.Suppl. 57 (1997) 201-205*, DOI: [10.1016/S0920-5632\(97\)00377-0](https://doi.org/10.1016/S0920-5632(97)00377-0)
- **The Nature of space and time.** S. Hawking, R. Penrose. 1996. Published in Princeton, USA: Univ. Pr. (1996) 141 p. (The Isaac Newton Institute series of lectures)
- **Virtual black holes.** S.W. Hawking (Cambridge U.). DAMTP-R-95-50. Oct 1995. 24 pp. Published in *Phys.Rev. D53 (1996) 3099-3107*. [arXiv:hep-th/9510029](https://arxiv.org/abs/hep-th/9510029), DOI: [10.1103/PhysRevD.53.3099](https://doi.org/10.1103/PhysRevD.53.3099)
- **The Probability for primordial black holes.** R. Bousso, S.W. Hawking (Cambridge U.). DAMTP-R-95-33. Jun 1995. 15 pp. Published in *Phys.Rev. D52 (1995) 5659-5664*. [arXiv:gr-qc/9506047](https://arxiv.org/abs/gr-qc/9506047), DOI: [10.1103/PhysRevD.52.5659](https://doi.org/10.1103/PhysRevD.52.5659)
- **Pair production of black holes on cosmic strings.** S.W. Hawking, Simon F. Ross (Cambridge U.). DAMTP-R-95-30. Jun 1995. 9 pp. Published in *Phys.Rev.Lett. 75 (1995) 3382-3385*. [arXiv:gr-qc/9506020](https://arxiv.org/abs/gr-qc/9506020), DOI: [10.1103/PhysRevLett.75.3382](https://doi.org/10.1103/PhysRevLett.75.3382)
- **Duality between electric and magnetic black holes.** S.W. Hawking, Simon F. Ross (Cambridge U.). DAMTP-R-95-8. Apr 1995. 16 pp. Published in *Phys.Rev. D52 (1995) 5865-5876*. [arXiv:hep-th/9504019](https://arxiv.org/abs/hep-th/9504019), DOI: [10.1103/PhysRevD.52.5865](https://doi.org/10.1103/PhysRevD.52.5865)
- **The Gravitational Hamiltonian, action, entropy and surface terms.** S.W. Hawking (Cambridge U.), Gary T. Horowitz (UC, Santa Barbara). DAMTP-R-94-52, UCSBTH-94-37. Jan 1995. 13 pp. Published in *Class.Quant.Grav. 13 (1996) 1487-1498*. [arXiv:gr-qc/9501014](https://arxiv.org/abs/gr-qc/9501014), DOI: [10.1088/0264-9381/13/6/017](https://doi.org/10.1088/0264-9381/13/6/017)
- **Quantum coherence and closed timelike curves.** S.W. Hawking (Cambridge U.). DAMTP-R-95-04. Jan 1995. 12 pp. Published in *Phys.Rev. D52 (1995) 5681-5686*. [arXiv:gr-qc/9502017](https://arxiv.org/abs/gr-qc/9502017), DOI: [10.1103/PhysRevD.52.5681](https://doi.org/10.1103/PhysRevD.52.5681)
- **Black holes and baby universes and other essays.** S. Hawking. 1995. Published in Toronto, Canada: Bantam Books (1994) 172 p, ISBN-13: 978-0553374117
- **Entropy, Area, and black hole pairs.** S.W. Hawking, Gary T. Horowitz (Newton Inst. Math. Sci., Cambridge), Simon F. Ross (Cambridge U.). NI-94-012, DAMTP-R-94-

- 26, UCSBTH-94-25. Sep 1994. 24 pp. *Published in Phys.Rev. D51 (1995) 4302-4314.* [arXiv:gr-qc/9409013](https://arxiv.org/abs/gr-qc/9409013), DOI: [10.1103/PhysRevD.51.4302](https://doi.org/10.1103/PhysRevD.51.4302)
- **Nature of space and time.** S.W. Hawking (Cambridge U.). Sep 1994. 62 pp. [arXiv:hep-th/9409195](https://arxiv.org/abs/hep-th/9409195)
 - **Euclidean quantum gravity.** G.W. Gibbons, (ed.), S.W. Hawking, (ed.) (Cambridge U.). 1994. *Published in Singapore, Singapore: World Scientific (1993) 586 p*
 - **The Superscattering matrix for two-dimensional black holes.** S.W. Hawking (Cambridge U. & Caltech). Nov 1993. 12 pp. *Published in Phys.Rev. D50 (1994) 3982-3986.* [arXiv:hep-th/9401109](https://arxiv.org/abs/hep-th/9401109), DOI: [10.1103/PhysRevD.50.3982](https://doi.org/10.1103/PhysRevD.50.3982)
 - **Quantum coherence in two-dimensions.** S.W. Hawking, J.D. Hayward (Cambridge U. & Caltech). CALT-68-1861, DAMTP-R-93-12. Mar 1993. 14 pp. *Published in Phys.Rev. D49 (1994) 5252-5256.* [arXiv:hep-th/9305165](https://arxiv.org/abs/hep-th/9305165), DOI: [10.1103/PhysRevD.49.5252](https://doi.org/10.1103/PhysRevD.49.5252)
 - **Supersymmetric Bianchi models and the square root of the Wheeler-DeWitt equation.** P.D. D'Eath, S.W. Hawking (Cambridge U.), O. Obregon (Guanajuato U., FIMEE). DAMTP-R-92-44. Feb 23, 1993. 11 pp. *Published in Phys.Lett. B300 (1993) 44-48,* DOI: [10.1016/0370-2693\(93\)90746-5](https://doi.org/10.1016/0370-2693(93)90746-5)
 - **The Origin of time asymmetry.** S.W. Hawking (Cambridge U.), R. Laflamme (Cambridge U. & Los Alamos), G.W. Lyons (Cambridge U.). PRINT-93-0178 (DAMTP,CAMBRIDGE). Feb 12, 1993. 41 pp. *Published in Phys.Rev. D47 (1993) 5342-5356.* [arXiv:gr-qc/9301017](https://arxiv.org/abs/gr-qc/9301017), DOI: [10.1103/PhysRevD.47.5342](https://doi.org/10.1103/PhysRevD.47.5342)
 - **Einstein's dream: Expeditions to the frontiers of space-time. Black holes and baby universes and other essays. (In German).** S.W. Hawking. 1993. *Published in Reinbek, Germany: Rowohlt (1993) 190 p*
 - **Naked and thunderbolt singularities in black hole evaporation.** S.W. Hawking, J.M. Stewart (Cambridge U.). PRINT-92-0362 (DAMTP,CAMBRIDGE), DAMTP-R-92-37. Jul 1992. 28 pp. *Published in Nucl.Phys. B400 (1993) 393-415.* [arXiv:hep-th/9207105](https://arxiv.org/abs/hep-th/9207105), DOI: [10.1016/0550-3213\(93\)90410-Q](https://doi.org/10.1016/0550-3213(93)90410-Q)
 - **Evaporation of two-dimensional black holes.** S.W. Hawking (Caltech & Cambridge U.). CALT-68-1774. Mar 20, 1992. 11 pp. *Published in Phys.Rev.Lett. 69 (1992) 406-409.* [arXiv:hep-th/9203052](https://arxiv.org/abs/hep-th/9203052), DOI: [10.1103/PhysRevLett.69.406](https://doi.org/10.1103/PhysRevLett.69.406)
 - **Kinks and topology change.** G.W. Gibbons, S.W. Hawking (Cambridge U.). 1992. *Published in Phys.Rev.Lett. 69 (1992) 1719-1721,* DOI: [10.1103/PhysRevLett.69.1719](https://doi.org/10.1103/PhysRevLett.69.1719)
 - **Evaporation of two-dimensional black holes.** S.W. Hawking (Cambridge U.). 1992. *Published in In *Trieste 1992, Proceedings, The renaissance of general relativity and cosmology* 274-286*
 - **Selection rules for topology change.** G.W. Gibbons, S.W. Hawking (Cambridge U.). PRINT-91-0452 (DAMTP,CAMBRIDGE). Nov 12, 1991. 14 pp. *Published in Commun.Math.Phys. 148 (1992) 345-352,* DOI: [10.1007/BF02100864](https://doi.org/10.1007/BF02100864)
 - **The no boundary condition and the arrow of time.** S.W. Hawking (Cambridge U., DAMTP). Sep 1991. *Prepared for NATO Workshop on the Physical Origin of Conference: C91-09-30.4*
 - **The Chronology protection conjecture.** S.W. Hawking (Cambridge U.). DAMTP-R-91-15. Jul 1991. 24 pp. *Published in Phys.Rev. D46 (1992) 603-611,* DOI: [10.1103/PhysRevD.46.603](https://doi.org/10.1103/PhysRevD.46.603)

- **Wormholes in string theory.** Alex Lyons (Alberta U.), S.W. Hawking (Cambridge U.). ALBERTA-THY-5-91. May 1991. 40 pp. Published in *Phys.Rev. D44 (1991) 3802-3818*, DOI: [10.1103/PhysRevD.44.3802](https://doi.org/10.1103/PhysRevD.44.3802)
- **The Alpha parameters of wormholes.** S.W. Hawking (Cambridge U.). 1991. Published in *Phys.Scripta T36 (1991) 222-227*, DOI: [10.1088/0031-8949/1991/T36/023](https://doi.org/10.1088/0031-8949/1991/T36/023)
- **The chronology protection conjecture.** S.W. Hawking (Cambridge U., DAMTP). 1991. Published in *In *Kyoto 1991, Recent developments in theoretical and experimental general relativity, gravitation and relativistic field theories, pt. A* 3-13*
- **Beginning or end? Inaugural lecture. (In German).** S. Hawking, (ed.) (Cambridge U.). 1991. Published in *Paderborn, Germany: Junfermann (1991) 43 p*
- **The Effective action for wormholes.** S.W. Hawking (Cambridge U.). PRINT-90-0682 (CAMBRIDGE). Nov 23, 1990. 19 pp. Published in *Nucl.Phys. B363 (1991) 117-131*, DOI: [10.1016/0550-3213\(91\)90237-R](https://doi.org/10.1016/0550-3213(91)90237-R)
- **The beginning of the universe.** S.W. Hawking (Cambridge U., DAMTP). Sep 1990. Prepared for (IUPAP) *International Conference on Primordial Conference: C90-09-04.2*
- **The spectrum of wormholes.** S.W. Hawking (Santa Barbara, KITP & Cambridge U.), Don N. Page (Santa Barbara, KITP & Penn State U. & Alberta U.). NSF-ITP-90-76. Jun 17, 1990. 37 pp. Published in *Phys.Rev. D42 (1990) 2655-2663*, DOI: [10.1103/PhysRevD.42.2655](https://doi.org/10.1103/PhysRevD.42.2655)
- **Gravitational radiation from collapsing cosmic string loops.** S.W. Hawking (Cambridge U.). DAMTP/R-90-14. Apr 1990. 7 pp. Published in *Phys.Lett. B246 (1990) 36-38*, DOI: [10.1016/0370-2693\(90\)91304-T](https://doi.org/10.1016/0370-2693(90)91304-T)
- **Wormholes and nonsimply connected manifolds.** S.W. Hawking (Cambridge U.). DAMTP-R-90-13. Jan 1990. 23 pp. Published in *In *Jerusalem 1989, Proceedings, Quantum cosmology and baby universes* 245-267 and Cambridge Univ. - DAMTP-R-90-13 (90,rec.Jul.) 23 p*
- **Baby universes. 2.** S.W. Hawking (Cambridge U.). 1990. Published in *Mod.Phys.Lett. A5 (1990) 453-466*, DOI: [10.1142/S0217732390000524](https://doi.org/10.1142/S0217732390000524)
- **Wormholes in dimensions I - 4.** S.W. Hawking (Cambridge U.). 1990. Published in *In *Boston 1990, Proceedings, Particles, strings and cosmology* 623-634. (see HIGH ENERGY PHYSICS INDEX 29 (1991) No.9950)*
- **The Formation and evolution of cosmic strings. Proceedings, Workshop, Cambridge, UK, July 3-7, 1989.** G.W. Gibbons, (ed.), S.W. Hawking, (ed.), T. Vachaspati, (ed.) (Cambridge U. & Tufts U.). 1990. Published in *Cambridge, UK: Univ. Pr. (1990) 542 p*
- **Do Wormholes Fix The Constants Of Nature?.** S.W. Hawking (Cambridge U.). Print-89-0795 (CAMBRIDGE), DAMTP/R-89/13. May 1989. 12 pp. Published in *Nucl.Phys. B335 (1990) 155*, DOI: [10.1016/0550-3213\(90\)90175-D](https://doi.org/10.1016/0550-3213(90)90175-D)
- **The Edge Of Space-time.** S. Hawking (Cambridge U.). 1989. Published in *IN *DAVIES, P. (ED.): THE NEW PHYSICS* 61-69*
- **Baby Universes And The Nonrenormalizability Of Gravity.** S.W. Hawking, R. Laflamme (Cambridge U.). Print-88-0290(CAMBRIDGE), DAMTP/R-88/3. Mar 1988. 6 pp. Published in *Phys.Lett. B209 (1988) 39*, DOI: [10.1016/0370-2693\(88\)91825-4](https://doi.org/10.1016/0370-2693(88)91825-4)

- **Wormholes in Space-Time.** S.W. Hawking (Cambridge U.). 1988. Published in *Phys.Rev. D37 (1988) 904-910*, DOI: [10.1103/PhysRevD.37.904](https://doi.org/10.1103/PhysRevD.37.904)
- **Baby universes.** S.W. Hawking (Cambridge U.). 1988. Published in *In *Leningrad 1988, Proceedings, A.A. Friedmann:Centenary volume** 81-92.
- **A Brief History Of Time.** S.W. Hawking. 1988. Published by Bantam (Sep 1988) 212p, ISBN-13: 978-0553380163
- **Quantum Cosmology.** S.W. Hawking (Cambridge U.). 1988. Published in *IN *FANG, LI-ZHI (ED.), RUFFINI, R. (ED.): QUANTUM COSMOLOGY*, 190-235 AND PREPRINT - HAWKING, S.W. (83,REC.DEC.) 64 P.*
- **The Quantum Theory Of The Universe.** S.W. Hawking (Cambridge U.). 1988. Published in *IN *JERUSALEM 1983/84, PROCEEDINGS, INTERSECTION BETWEEN ELEMENTARY PARTICLE PHYSICS AND COSMOLOGY*, 71-97.*
- **Black Holes From Cosmic Strings.** S.W. Hawking (Cambridge U.). Print-88-0310 (CAMBRIDGE). Dec 1987. 5 pp. Published in *Phys.Lett. B231 (1989) 237*, DOI: [10.1016/0370-2693\(89\)90206-2](https://doi.org/10.1016/0370-2693(89)90206-2)
- **The Direction Of Time.** S.W. Hawking (Cambridge U.). Print-87-0849 (DAMTP). Nov 10, 1987. 10 pp. Published in *New Sci. 115 (1987) 46*
- **How probable is inflation?.** S.W. Hawking (Cambridge U.), Don N. Page (Penn State U.). Print-87-0739 (PENN STATE). Jun 1987. 30 pp. Published in *Nucl.Phys. B298 (1988) 789-809*, DOI: [10.1016/0550-3213\(88\)90008-9](https://doi.org/10.1016/0550-3213(88)90008-9)
- **The Origin Of The Universe.** S.W. Hawking (Cambridge U.). Print-87-0841 (CAMBRIDGE). Jun 1987. 10 pp.
- **The Ground State Of The Universe.** S.W. Hawking (Cambridge U.). Print-87-0845 (CAMBRIDGE), C87/05/01.2. May 1987. 3 pp. *Closing Remarks given at Conference: C87-05-01.2*
- **Quantum Coherence Down the Wormhole.** S.W. Hawking (Cambridge U.). Print-87-0842 (CAMBRIDGE). Apr 1987. 12 pp. Published in *Phys.Lett. B195 (1987) 337*, DOI: [10.1016/0370-2693\(87\)90028-1](https://doi.org/10.1016/0370-2693(87)90028-1)
- **The Schrodinger Equation In Quantum Cosmology And String Theory.** S.W. Hawking (Cambridge U.). Print-87-0843 (CAMBRIDGE). Mar 1987. 10 pp.
- **Three Hundred Years Of Gravitation.** S.W. Hawking, (Ed.), W. Israel, (Ed.). 1987. Published in *Cambridge, UK: Univ. Pr. (1987) 684 p*
- **Quantum Cosmology.** S.W. Hawking (Cambridge U.). Print-87-0166 (CAMBRIDGE), C87/06/29. Dec 1986. 31 pp. Published in *In *Hawking, S.W. (ed.), Israel, W. (ed.): Three hundred years of gravitation*, 631-651 and Preprint - Hawking, S.W. (86,rec.Jan.87) 31 p*
- **A Natural Measure On The Set Of All Universes.** G.W. Gibbons, S.W. Hawking, J.M. Stewart (Cambridge U.). PRINT-86-1241. Oct 14, 1986. 19 pp. Published in *Nucl.Phys. B281 (1987) 736*, DOI: [10.1016/0550-3213\(87\)90425-1](https://doi.org/10.1016/0550-3213(87)90425-1)
- **The Density Matrix Of The Universe.** S.W. Hawking (Cambridge U.). PRINT-86-0918 (CAMBRIDGE). Apr 1986. 10 pp. Published in *Phys.Scripta T15 (1987) 151*, DOI: [10.1088/0031-8949/1987/T15/020](https://doi.org/10.1088/0031-8949/1987/T15/020)
- **Lectures On Quantum Cosmology.** S.W. Hawking (Cambridge U.). 1986. Published in *In *Kyoto 1985, Proceedings, Quantum Gravity and Cosmology*, 170-206*

- **Lectures On Quantum Cosmology** S.W. Hawking (Cambridge U.). 1986. Published in In *De Vega, H.j. (Ed.), Sanchez, N. (Ed.): *Field Theory, Quantum Gravity and Strings**, 1-45
- **Who's Afraid Of (higher Derivative) Ghosts?** S.W. Hawking (Cambridge U.). Print-86-0124 (CAMBRIDGE). Sep 1985. 16 pp. Published in IN *BATALIN, I.A. (ED.) ET AL.: *QUANTUM FIELD THEORY AND QUANTUM STATISTICS, VOL. 2**, 129-139. [link](#)
- **Operator Ordering and the Flatness of the Universe.** S.W. Hawking (Cambridge U.), Don N. Page (Penn State U.). PRINT-85-0503 (PENN-STATE). Apr 1985. 21 pp. Published in *Nucl.Phys. B264 (1986) 185-196*, DOI: [10.1016/0550-3213\(86\)90478-5](https://doi.org/10.1016/0550-3213(86)90478-5)
- **The Arrow Of Time In Cosmology.** S.W. Hawking (Cambridge U.). Print-85-0492 (CAMBRIDGE). Apr 1985. 23 pp. Published in *Phys.Rev. D32 (1985) 2489*, DOI: [10.1103/PhysRevD.32.2489](https://doi.org/10.1103/PhysRevD.32.2489)
- **Quantum Cosmology - Beyond Minisuperspace.** J. Halliwell, S. Hawking (Cambridge U.). 1985. Published in In *Rome 1985, Proceedings, General Relativity, Pt. A*, 65-83
- **The Quantum Mechanics Of The Universe.** S.W. Hawking (Cambridge U.). 1985. Published in In *Geneva 1983, Proceedings, Large-scale Structure Of The Universe, Cosmology and Fundamental Physics*, 415-422
- **The Origin of Structure in the Universe.** J.J. Halliwell, S.W. Hawking (Cambridge U. & Munich, Max Planck Inst.). Print-85-0265 (CAMBRIDGE). Oct 1984. 48 pp. Published in *Phys.Rev. D31 (1985) 1777*, DOI: [10.1103/PhysRevD.31.1777](https://doi.org/10.1103/PhysRevD.31.1777)
- **Limits On Inflationary Models Of The Universe.** S.W. Hawking (Cambridge U.). Print-85-0067 (CAMBRIDGE). Sep 1984. 8 pp. Published in *Phys.Lett. B150 (1985) 339*, DOI: [10.1016/0370-2693\(85\)90989-X](https://doi.org/10.1016/0370-2693(85)90989-X)
- **Higher Derivatives In Quantum Cosmology. I. The Isotropic Case.** S.W. Hawking, J.C. Luttrell (Cambridge U.). Print-84-0711 (CAMBRIDGE). Aug 1984. 16 pp. Published in *Nucl.Phys. B247 (1984) 250*, DOI: [10.1016/0550-3213\(84\)90380-8](https://doi.org/10.1016/0550-3213(84)90380-8)
- **Nontrivial Topologies In Quantum Gravity.** S.W. Hawking (Cambridge U.). Print-84-0714 (CAMBRIDGE). Aug 1984. 16 pp. Published in *Nucl.Phys. B244 (1984) 135*, DOI: [10.1016/0550-3213\(84\)90185-8](https://doi.org/10.1016/0550-3213(84)90185-8)
- **Numerical Calculations Of Minisuperspace Cosmological Models.** S.W. Hawking, Z.C. Wu (Cambridge U.). Print-84-0913 (CAMBRIDGE). Jul 1984. 18 pp. Published in *Phys.Lett. B151 (1985) 15*, DOI: [10.1016/0370-2693\(85\)90815-9](https://doi.org/10.1016/0370-2693(85)90815-9)
- **The Isotropy Of The Universe.** Stephen W. Hawking, Julian C. Luttrell (Cambridge U.). Print-84-0479 (CAMBRIDGE). Jun 1984. 8 pp. Published in *Phys.Lett. B143 (1984) 83*, DOI: [10.1016/0370-2693\(84\)90809-8](https://doi.org/10.1016/0370-2693(84)90809-8)
- **The Cosmological Constant Is Probably Zero.** S.W. Hawking (Cambridge U.). Print-84-0116 (CAMBRIDGE). Feb 1984. 5 pp. Published in *Phys.Lett. B134 (1984) 403*, DOI: [10.1016/0370-2693\(84\)91370-4](https://doi.org/10.1016/0370-2693(84)91370-4)
- **Quantum Fluctuations As The Cause Of Inhomogeneity In The Universe.** J. Halliwell, S.W. Hawking (Cambridge U.). 1984. Published in In *Moscow 1984, Proceedings, Quantum Gravity*, 509-565
- **The Very Early Universe. Proceedings, Nuffield Workshop, Cambridge, Uk, June 21 - July 9, 1982.** G.W. Gibbons, (Ed.), S.W. Hawking, (Ed.), S.T.C. Siklos, (Ed.). 1984. Published in *Cambridge, Uk: Univ. Pr. (1983) 480p*

- **The Quantum State of the Universe.** S.W. Hawking (Cambridge U.). PRINT-84-0117 (CAMBRIDGE). Nov 1983. 28 pp. *Published in Nucl.Phys. B239 (1984) 257*, DOI: [10.1016/0550-3213\(84\)90093-2](https://doi.org/10.1016/0550-3213(84)90093-2)
- **The Unification Of Physics.** S.W. Hawking (Cambridge U.). Print-84-0115 (CAMBRIDGE). Aug 1983. 10 pp.
- **Wave Function of the Universe.** J.B. Hartle (Chicago U., EFI& Santa Barbara, KITP), S.W. Hawking (Cambridge U. & Santa Barbara, KITP). PRINT-83-0937 (CAMBRIDGE). Jul 1983. 46 pp. *Published in Phys.Rev. D28 (1983) 2960-2975*, DOI: [10.1103/PhysRevD.28.2960](https://doi.org/10.1103/PhysRevD.28.2960)
- **Quantum Cosmology.** S.W. Hawking (Cambridge U.). PRINT-84-0114 (CAMBRIDGE), C83-06-27.1. Jul 1983. 64 pp. *Published in In *Les Houches 1983, Proceedings, Relativity, Groups and Topology, Ii*, 333-379 and Preprint - HAWKING, S.W. (83,REC.DEC.) 64p*
- **Euclidean Approach To The Inflationary Universe.** S.W. Hawking (Cambridge U.). Print-83-0318 (CAMBRIDGE). Apr 1983. 10 pp. *Published in In *Cambridge 1982, Proceedings, The Very Early Universe*, 287-296 and Preprint -HAWKING, S.W. (REC.APR.83) 12p*
- **The Boundary Conditions For Gauged Supergravity.** S.W. Hawking (Cambridge U.). Print-83-0317 (CAMBRIDGE). Mar 1983. 11 pp. *Published in Phys.Lett. B126 (1983) 175*, DOI: [10.1016/0370-2693\(83\)90585-3](https://doi.org/10.1016/0370-2693(83)90585-3)
- **Fluctuations In The Inflationary Universe.** S.W. Hawking (Cambridge U.), I.G. Moss (Newcastle upon Tyne U.). PRINT-83-0316 (CAMBRIDGE). Dec 1982. 20 pp. *Published in Nucl.Phys. B224 (1983) 180*, DOI: [10.1016/0550-3213\(83\)90319-X](https://doi.org/10.1016/0550-3213(83)90319-X)
- **Thermodynamics of Black Holes in anti-De Sitter Space.** S.W. Hawking (Cambridge U.), Don N. Page (Penn State U.). PRINT-83-0019 (CAMBRIDGE). Jul 1982. 18 pp. *Published in Commun.Math.Phys. 87 (1983) 577*, DOI: [10.1007/BF01208266](https://doi.org/10.1007/BF01208266)
- **Positive Mass Theorems For Black Holes.** G.W. Gibbons, S.W. Hawking (Cambridge U.), Gary T. Horowitz (Princeton, Inst. Advanced Study), Malcolm J. Perry (Princeton U.). Print-82-0505 (PRINCETON). Jul 1982. 25 pp. *Published in Commun.Math.Phys. 88 (1983) 295*, DOI: [10.1007/BF01213209](https://doi.org/10.1007/BF01213209)
- **The Development of Irregularities in a Single Bubble Inflationary Universe.** S.W. Hawking (Cambridge U.). Print-83-0015 (CAMBRIDGE). Jun 1982. 8 pp. *Published in Phys.Lett. B115 (1982) 295*, DOI: [10.1016/0370-2693\(82\)90373-2](https://doi.org/10.1016/0370-2693(82)90373-2)
- **The Unpredictability of Quantum Gravity.** S.W. Hawking (Cambridge U.). Print-83-0017 (CAMBRIDGE). May 1982. 29 pp. *Published in Commun.Math.Phys. 87 (1982) 395-415*, DOI: [10.1007/BF01206031](https://doi.org/10.1007/BF01206031)
- **Bubble Collisions in the Very Early Universe.** S.W. Hawking, I.G. Moss, J.M. Stewart (Cambridge U.). Print-82-0180 (CAMBRIDGE). Mar 1982. 33 pp. *Published in Phys.Rev. D26 (1982) 2681*, DOI: [10.1103/PhysRevD.26.2681](https://doi.org/10.1103/PhysRevD.26.2681)
- **Supercooled Phase Transitions in the Very Early Universe.** S.W. Hawking, I.G. Moss (Cambridge U.). Print-82-0181 (CAMBRIDGE). Dec 1981. 9 pp. *Published in Phys.Lett. B110 (1982) 35*, DOI: [10.1016/0370-2693\(82\)90946-7](https://doi.org/10.1016/0370-2693(82)90946-7)
- **The Boundary Conditions Of The Universe.** S.W. Hawking (Cambridge U.). PRINT-82-0179 (CAMBRIDGE). Sep 1981. 11 pp. *Published in Pontif.Acad.Sci.Scrivaria 48 (1982) 563-574*

- **The Cosmological Constant And The Weak Anthropic Principle.** S.W. Hawking (Cambridge U.). Print-82-0177 (CAMBRIDGE). Aug 1981. 9 pp. *Published in In *London 1981, Proceedings, Quantum Structure Of Space and Time**, 423-432
- **[Is The End In Sight For Theoretical Physics?](#)** S.W. Hawking (Cambridge U.). PRINT-81-0004 (CAMBRIDGE). Jan 1981. 17 pp. *Published in Phys.Bull. 32 (1981) 15-17*
- **[The Loss Of Quantum Coherence Due To Virtual Black Holes.](#)** S.W. Hawking (Cambridge U.). 1981. *Published in In *Moscow 1981, Proceedings, Quantum Gravity**, 19-28
- **Why Is The Apparent Cosmological Constant Zero? (talk).** S.W. Hawking (Cambridge U.). 1981. *Published in In *Muenchen 1981, Proceedings, Unified Theories Of Elementary Particles**, 167-175
- **Superspace And Supergravity. Proceedings, Nuffield Workshop, Cambridge, Uk, June 16 - July 12, 1980.** S.W. Hawking, (ed.), M. Rocek, (ed.). 1981. *Published in Cambridge, Uk: Univ. Pr. (1981) 527p*
- **Interacting Quantum Fields Around A Black Hole.** S.W. Hawking (Cambridge U.). Print-81-0251 (CAMBRIDGE). Dec 1980. 40 pp. *Published in Commun.Math.Phys. 80 (1981) 421*, DOI: [10.1007/BF01208279](https://doi.org/10.1007/BF01208279)
- **Acausal Propagation In Quantum Gravity.** S.W. Hawking (Cambridge U.). PRINT-80-0866 (CAMBRIDGE), C80-04-15. Apr 1980. 22 pp. *Published in In *Oxford 1980, Proceedings, Quantum Gravity 2**, 393-415
- **The Path Integral Approach To Quantum Gravity.** S.W. Hawking (Cambridge U.). 1980. *Published in In *Hawking, S.W., Israel, W.: General Relativity**, 746-789
- **Introductory Survey.** S.W. Hawking (Cambridge U.), W. Israel (Alberta U.). 1980. *Published in In *Hawking, S.W., Israel, W.: General Relativity**, 1-23
- **Quantum Gravitational Bubbles.** S.W. Hawking, Don N. Page, C.N. Pope (Cambridge U.). Print-80-0053 (CAMBRIDGE). Oct 1979. 33 pp. *Published in Nucl.Phys. B170 (1980) 283-306*, DOI: [10.1016/0550-3213\(80\)90151-0](https://doi.org/10.1016/0550-3213(80)90151-0)
- **Yang-mills Instantons And The S Matrix.** S.W. Hawking, C.N. Pope (Cambridge U.). Print-79-0654 (CAMBRIDGE). Apr 1979. 32 pp. *Published in Nucl.Phys. B161 (1979) 93*, DOI: [10.1016/0550-3213\(79\)90128-7](https://doi.org/10.1016/0550-3213(79)90128-7)
- **Space-Time Foam.** S.W. Hawking (Cambridge U.). Print-79-0038 (CAMBRIDGE). Jan 1979. 24 pp. *Published in Nucl.Phys. B144 (1978) 349-362*, DOI: [10.1016/0550-3213\(78\)90375-9](https://doi.org/10.1016/0550-3213(78)90375-9)
- **Gravitational Multi – Instantons.** G.W. Gibbons, S.W. Hawking (Cambridge U.). Print-79-0042 (CAMBRIDGE). Jan 1979. 6 pp. *Published in Phys.Lett. B78 (1978) 430*, DOI: [10.1016/0370-2693\(78\)90478-1](https://doi.org/10.1016/0370-2693(78)90478-1)
- **Symmetry Breaking By Instantons In Supergravity.** S.W. Hawking, C.N. Pope (Cambridge U.). Print-79-0043 (CAMBRIDGE). Jan 1979. 22 pp. *Published in Nucl.Phys. B146 (1978) 381*, DOI: [10.1016/0550-3213\(78\)90073-1](https://doi.org/10.1016/0550-3213(78)90073-1)
- **The Propagation Of Particles In Space-time Foam.** S.W. Hawking, Don N. Page, C.N. Pope (Cambridge U.). 1979. *Published in Phys.Lett. B86 (1979) 175-178*, DOI: [10.1016/0370-2693\(79\)90812-8](https://doi.org/10.1016/0370-2693(79)90812-8)
- **Classification of Gravitational Instanton Symmetries.** G.W. Gibbons, S.W. Hawking (Cambridge U.). 1979. *Published in Commun.Math.Phys. 66 (1979) 291-310*, DOI: [10.1007/BF01197189](https://doi.org/10.1007/BF01197189)

- **Relativity Today.** S. Hawking (Cambridge U.), W. Israel (Alberta U.). 1979. *Published in New Sci.* 81 (1979) 761-763
- **General Relativity. An Einstein Centenary Survey Pt I.** S.W. Hawking (Cambridge U.), W. Israel (Alberta U.). 1979. *Published in Cambridge, United Kingdom: Univ.Pr.(1979)* 919p
- **Theoretical Advances In General Relativity.** S.W. Hawking (Cambridge U.). Print-79-0595 (CAMBRIDGE). Nov 1978. 16 pp.
- **Euclidean Quantum Gravity.** Stephen W. Hawking (Cambridge U.). PRINT-78-0745 (CAMBRIDGE), C78-07-10.1-2. Jul 1978. 30 pp. *Published in NATO Adv.Study Inst.Ser.B Phys.* 44 (1979) 145
- **Path Integrals and the Indefiniteness of the Gravitational Action.** G.W. Gibbons (Munich, Max Planck Inst. & Cambridge U.), S.W. Hawking, M.J. Perry (Cambridge U.). PRINT-78-0375 (CAMBRIDGE). Apr 1978. 14 pp. *Published in Nucl.Phys.* B138 (1978) 141, DOI: [10.1016/0550-3213\(78\)90161-X](https://doi.org/10.1016/0550-3213(78)90161-X)
- **Quantum Gravity and Path Integrals.** S.W. Hawking (Cambridge U. & Caltech). 1978. *Published in Phys.Rev.* D18 (1978) 1747-1753, DOI: [10.1103/PhysRevD.18.1747](https://doi.org/10.1103/PhysRevD.18.1747)
- **Generalized Spin Structures in Quantum Gravity.** S.W. Hawking, C.N. Pope (Cambridge U.). Print-78-0374 (CAMBRIDGE). Nov 1977. 6 pp. *Published in Phys.Lett.* B73 (1978) 42-44, DOI: [10.1016/0370-2693\(78\)90167-3](https://doi.org/10.1016/0370-2693(78)90167-3)
- **Cosmological Event Horizons, Thermodynamics, and Particle Creation.** G.W. Gibbons, S.W. Hawking (Cambridge U.). 1977. *Published in Phys.Rev.* D15 (1977) 2738-2751, DOI: [10.1103/PhysRevD.15.2738](https://doi.org/10.1103/PhysRevD.15.2738)
- **The Quantum Mechanics of Black Holes.** S.W. Hawking. 1977. *Published in Sci.Am.* 236 (1977) 34-49, DOI: [10.1038/scientificamerican0177-34](https://doi.org/10.1038/scientificamerican0177-34)
- **Black Holes and Unpredictability.** S.W. Hawking (Cambridge U.). PRINT-77-0292 (CAMBRIDGE). Dec 1976. 6 pp. *Published in Phys.Bull.* 29 (1978) 23-24
- **Gravitational Instantons.** S.W. Hawking (Cambridge U.). Print-77-0294 (CAMBRIDGE). Dec 1976. 8 pp. *Published in Phys.Lett.* A60 (1977) 81, DOI: [10.1016/0375-9601\(77\)90386-3](https://doi.org/10.1016/0375-9601(77)90386-3)
- **Zeta Function Regularization of Path Integrals in Curved Space-Time.** S.W. Hawking (Cambridge U.). PRINT-77-0293 (CAMBRIDGE). Dec 1976. 29 pp. *Published in Commun.Math.Phys.* 55 (1977) 133, DOI: [10.1007/BF01626516](https://doi.org/10.1007/BF01626516)
- **Action Integrals and Partition Functions in Quantum Gravity.** G.W. Gibbons, S.W. Hawking (Cambridge U.). PRINT-76-0995 (CAMBRIDGE). Sep 1976. 14 pp. *Published in Phys.Rev.* D15 (1977) 2752-2756, DOI: [10.1103/PhysRevD.15.2752](https://doi.org/10.1103/PhysRevD.15.2752)
- **Gamma rays from primordial black holes.** Don N. Page, S.W. Hawking. May 1976. 7 pp. *Published in Astrophys.J.* 206 (1976) 1-7, DOI: [10.1086/154350](https://doi.org/10.1086/154350)
- **Breakdown of Predictability in Gravitational Collapse.** S.W. Hawking (Cambridge U. & Caltech). 1976. *Published in Phys.Rev.* D14 (1976) 2460-2473, DOI: [10.1103/PhysRevD.14.2460](https://doi.org/10.1103/PhysRevD.14.2460)
- **Path Integral Derivation of Black Hole Radiance.** J.B. Hartle, S.W. Hawking (UC, Santa Barbara & Caltech & Cambridge U.). 1976. *Published in Phys.Rev.* D13 (1976) 2188-2203, DOI: [10.1103/PhysRevD.13.2188](https://doi.org/10.1103/PhysRevD.13.2188)
- **Black Holes and Thermodynamics.** S.W. Hawking (Caltech & Cambridge U.). 1976. *Published in Phys.Rev.* D13 (1976) 191-197, DOI: [10.1103/PhysRevD.13.191](https://doi.org/10.1103/PhysRevD.13.191)

- **A New Topology for Curved Space-Time Which Incorporates the Causal, Differential, and Conformal Structures.** S.W. Hawking (Cambridge U. & Caltech), A.R. King, P.J. McCarthy. 1976. *Published in J.Math.Phys.* 17 (1976) 174-181, DOI: [10.1063/1.522874](https://doi.org/10.1063/1.522874)
- **Particle Creation by Black Holes.** S.W. Hawking (Cambridge U.). Aug 1975. 22 pp. *Published in Commun.Math.Phys.* 43 (1975) 199-220, Erratum-ibid. 46 (1976) 206-206, DOI: [10.1007/BF02345020](https://doi.org/10.1007/BF02345020)
- **Black hole explosions.** S.W. Hawking (Cambridge U.). Mar 1974. 2 pp. *Published in Nature* 248 (1974) 30-31, DOI: [10.1038/248030a0](https://doi.org/10.1038/248030a0)
- **Black holes in the early Universe.** Bernard J. Carr, S.W. Hawking (Cambridge U., Inst. of Astron. & Cambridge U., DAMTP). Feb 1974. 17 pp. *Published in Mon.Not.Roy.Astron.Soc.* 168 (1974) 399-415. DOI: [10.1093/mnras/168.2.399](https://doi.org/10.1093/mnras/168.2.399)
- **Causally continuous space-times.** S.W. Hawking, R.K. Sachs. 1974. *Published in Commun.Math.Phys.* 35 (1974) 287-296, DOI: [10.1007/BF01646350](https://doi.org/10.1007/BF01646350)
- **A Variational principle for black holes.** S.W. Hawking. 1973. *Published in Commun.Math.Phys.* 33 (1973) 323-334, DOI: [10.1007/BF01646744](https://doi.org/10.1007/BF01646744)
- **The Four laws of black hole mechanics.** James M. Bardeen (Yale U.), B. Carter, S.W. Hawking (Cambridge U.). 1973. *Published in Commun.Math.Phys.* 31 (1973) 161-170, DOI: [10.1007/BF01645742](https://doi.org/10.1007/BF01645742)
- **The Large scale structure of space-time.** S.W. Hawking, G.F.R. Ellis. 1973. 391 pp. *Published in Cambridge University Press, Cambridge, 1973.* ISBN-13: 978-0521099066
- **The rotation and distortion of the universe.** C.B. Collins, S.W. Hawking. Jan 1973, *Published in Mon.Not.Roy.Astron.Soc.* 162 (1973) 307-320
- **Why is the Universe isotropic?.** C.B. Collins, S.W. Hawking (Cambridge U., DAMTP & Cambridge U.). Sep 1972. 18 pp. *Published in Astrophys.J.* 180 (1973) 317-334, DOI: [10.1086/151965](https://doi.org/10.1086/151965)
- **Solutions of the Einstein-Maxwell equations with many black holes.** J.B. Hartle, S.W. Hawking. Jun 1972. *Published in Commun.Math.Phys.* 26 (1972) 87-101, DOI: [10.1007/BF01645696](https://doi.org/10.1007/BF01645696)
- **Energy and angular momentum flow into a black hole.** S.W. Hawking (Cambridge U., DAMTP), J.B. Hartle (UC, Santa Barbara). 1972. *Published in Commun.Math.Phys.* 27 (1972) 283-290, DOI: [10.1007/BF01645515](https://doi.org/10.1007/BF01645515)
- **Black holes in the Brans-Dicke theory of gravitation.** S.W. Hawking (Cambridge U.). 1972. *Published in Commun.Math.Phys.* 25 (1972) 167-171, DOI: [10.1007/BF01877518](https://doi.org/10.1007/BF01877518)
- **Theory of the detection of short bursts of gravitational radiation.** G.W. Gibbons, S.W. Hawking (Cambridge U., DAMTP). 1972. *Published in Phys.Rev.* D4 (1971) 2191-2197, DOI: [10.1103/PhysRevD.4.2191](https://doi.org/10.1103/PhysRevD.4.2191)

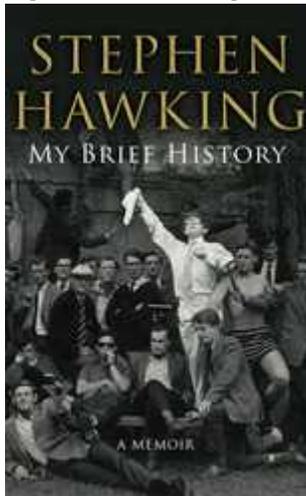
- **Black holes in general relativity.** S.W. Hawking (Cambridge U.). Oct 1971. *Published in Commun.Math.Phys.* 25 (1972) 152-166, DOI: [10.1007/BF01877517](https://doi.org/10.1007/BF01877517)
- **Gravitational radiation from colliding black holes.** S.W. Hawking (Cambridge U.). Mar 1971. *Published in Phys.Rev.Lett.* 26 (1971) 1344-1346, DOI: [10.1103/PhysRevLett.26.1344](https://doi.org/10.1103/PhysRevLett.26.1344)
- **Evidence for black holes in binary star systems.** S.W. Hawking, G.W. Gibbons. 1971. *Published in Nature* 232 (1971) 465, DOI: [10.1038/232465a0](https://doi.org/10.1038/232465a0)
- **[The Definition and occurrence of singularities in general relativity.](#)** Stephen Hawking. 1971. *Published in Lect.Notes Math.* 209 (1971) 275-279
- **Stable and generic properties in general relativity.** Stephen Hawking (Cambridge U., Inst. of Astron.). 1971. *Published in Gen.Rel.Grav.* 1 (1971) 393-400, DOI: [10.1007/BF00759218](https://doi.org/10.1007/BF00759218)
- **[Gravitationally collapsed objects of very low mass.](#)** Stephen Hawking. 1971. *Published in Mon.Not.Roy.Astron.Soc.* 152 (1971) 75. DOI: [10.1093/mnras/152.1.75](https://doi.org/10.1093/mnras/152.1.75)
- **The Singularities of gravitational collapse and cosmology.** S.W. Hawking (Cambridge U.), R. Penrose (Birkbeck Coll.). Jan 1970. 20 pp. *Published in Proc.Roy.Soc.Lond.* A314 (1970) 529-548, DOI: [10.1098/rspa.1970.0021](https://doi.org/10.1098/rspa.1970.0021)
- **The conservation of matter in general relativity.** S. Hawking (Cambridge U., DAMTP). 1970. *Published in Commun.Math.Phys.* 18 (1970) 301-306, DOI: [10.1007/BF01649448](https://doi.org/10.1007/BF01649448)
- **[Singularities in collapsing stars and universes.](#)** Stephen Hawking, Dennis Sciama. 1969. *Published in Comments Astrophys. Space Phys.* 1 (1969) 1
- **[On the Rotation of the universe.](#)** S.W. Hawking (Cambridge U., Inst. of Astron.). Sep 1968. 13 pp. *Published in Mon.Not.Roy.Astron.Soc.* 142 (1969) 129-141.
- **Gravitational radiation in an expanding universe.** Stephen Hawking (Cambridge U., DAMTP). Apr 1968. *Published in J.Math.Phys.* 9 (1968) 598-604, DOI: [10.1063/1.1664615](https://doi.org/10.1063/1.1664615)
- **The Cosmic black body radiation and the existence of singularities in our universe.** G.F.R. Ellis, Stephen Hawking. 1968. *Published in Astrophys.J.* 152 (1968) 25, DOI: [10.1086/149520](https://doi.org/10.1086/149520)
- **[The Existence of cosmic time functions.](#)** Stephen Hawking (Cambridge U., DAMTP). 1968. *Published in Proc.Roy.Soc.Lond.* A308 (1968) 433-435. DOI: [10.1098/rspa.1969.0018](https://doi.org/10.1098/rspa.1969.0018)

- **The occurrence of singularities in cosmology. III. Causality and singularities.** Stephen Hawking (Cambridge U., DAMTP). 1967. *Published in Proc.Roy.Soc.Lond. A300 (1967) 187-201*, DOI: [10.1098/rspa.1967.0164](https://doi.org/10.1098/rspa.1967.0164)
- **Perturbations of an expanding universe.** S.W. Hawking (Cambridge U., DAMTP). Feb 1966. 11 pp. *Published in Astrophys.J. 145 (1966) 544-554*, DOI: [10.1086/148793](https://doi.org/10.1086/148793)
- **Singularities in the universe.** S.W. Hawking. 1966. *Published in Phys.Rev.Lett. 17 (1966) 444-445*, DOI: [10.1103/PhysRevLett.17.444](https://doi.org/10.1103/PhysRevLett.17.444)
- **Helium production in anisotropic big bang universes.** Stephen Hawking, J.R. Taylor (Cambridge U., DAMTP). 1966. *Published in Nature 209 (1966) 1278-1279*, DOI: [10.1038/2091278a0](https://doi.org/10.1038/2091278a0)
- **The Occurrence of singularities in cosmology.** Stephen Hawking (Cambridge U., DAMTP). 1966. *Published in Proc.Roy.Soc.Lond. A294 (1966) 511-521*, DOI: [10.1098/rspa.1966.0221](https://doi.org/10.1098/rspa.1966.0221)
- **The Occurrence of singularities in cosmology. II.** Stephen Hawking (Cambridge U., DAMTP). 1966. *Published in Proc.Roy.Soc.Lond. A295 (1966) 490-493*, DOI: [10.1098/rspa.1966.0255](https://doi.org/10.1098/rspa.1966.0255)
- **Singularities and the geometry of space-time.** Stephen Hawking. 1966. DOI: [10.1140/epjh/e2014-50013-6](https://doi.org/10.1140/epjh/e2014-50013-6)
- **Singularities in homogeneous world models.** Stephen Hawking, G.F.R. Ellis (Cambridge U., DAMTP & Cambridge U.). Jun 1965. *Published in Phys.Lett. 17 (1965) 246-247*, DOI: [10.1016/0031-9163\(65\)90510-X](https://doi.org/10.1016/0031-9163(65)90510-X)
- **On the Hoyle-Narlikar theory of gravitation.** Stephen Hawking (Cambridge U., DAMTP). Feb 1965. *Published in Proc.Roy.Soc.Lond. A286 (1965) 313-319*, DOI: [10.1098/rspa.1965.0146](https://doi.org/10.1098/rspa.1965.0146)
- **Occurrence of singularities in open universes.** Stephen Hawking (Cambridge U., DAMTP). 1965. *Published in Phys.Rev. ett. 15 (1965) 689-690*, DOI: [10.1103/PhysRevLett.15.689](https://doi.org/10.1103/PhysRevLett.15.689)
- **Properties of Expanding Universes.** Stephen Hawking, PhD Thesis. 1965, DOI: [10.17863/CAM.11283](https://doi.org/10.17863/CAM.11283)

Books

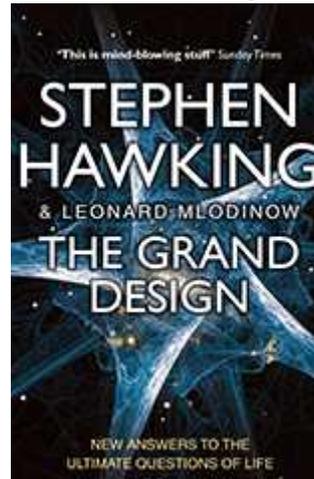
Professor Hawking has published many books tackling the fundamental questions about the universe and our existence. Stephen has also published many scientific [papers](#) and [lecture notes](#).

My Brief History



My Brief History recounts Stephen Hawking's improbable journey, from his post-war London boyhood to his years of international acclaim and celebrity. Illustrated with rarely seen photographs, this concise, witty and candid account introduces readers to the inquisitive schoolboy whose classmates nicknamed him 'Einstein'; the jokester who once placed a bet with a colleague over the existence of a black hole; and the young husband and father striving to gain a foothold in the world of academia. Read [more](#), or you can order your copy at [amazon.com](#) or [amazon.co.uk](#).

The Grand Design



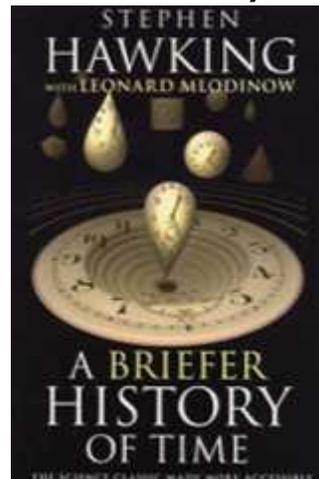
When and how did the universe begin? Why are we here? What is the nature of reality? Is the apparent 'grand design' of our universe evidence for a benevolent creator who set things in motion? Or does science offer another explanation? In *The Grand Design*, the most recent scientific thinking about the mysteries of the universe is presented in language marked by both brilliance and simplicity. Read [more](#), or you can order your copy at [amazon.com](#) or [amazon.co.uk](#).

A Brief History of Time



Was there a beginning of time? Could time run backwards? Is the universe infinite or

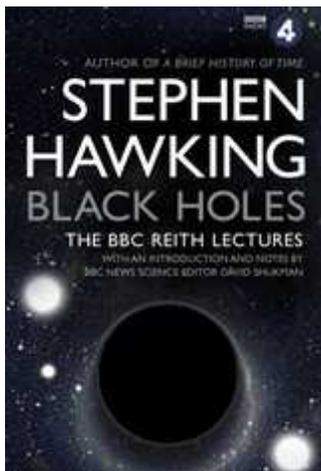
A Briefer History of Time



Although "briefer," this book is much more than a mere explanation of Hawking's earlier

does it have boundaries? These are just some of the questions considered in an internationally acclaimed masterpiece by one of the world's greatest thinkers. It begins by reviewing the great theories of the cosmos from Newton to Einstein, before delving into the secrets which still lie at the heart of space and time, from the Big Bang to black holes, via spiral galaxies and string theory. Read [more](#), or you can order your copy at amazon.com or amazon.co.uk.

Black Holes: The Reith lectures



“It is said that fact is sometimes stranger than fiction, and nowhere is that more true than in the case of black holes. Black holes are stranger than anything dreamed up by science fiction writers.”

In 2016 Professor Stephen Hawking delivered the BBC Reith Lectures on a subject that has fascinated him for decades – black holes. In these flagship lectures the legendary physicist argues that if we could only understand black holes and how they challenge the very nature of space and time, we could unlock the secrets of the universe.

George and the Unbreakable Code

work.

A Briefer History of Time both clarifies and expands on the great subjects of the original, and records the latest developments in the field—from string theory to the search for a unified theory of all the forces of physics.

Thirty-seven full-color illustrations enhance the text and make *A Briefer History of Time* an exhilarating and must-have addition in its own right to the great literature of science and ideas. Read [more](#), or you can order your copy at amazon.com or amazon.co.uk.

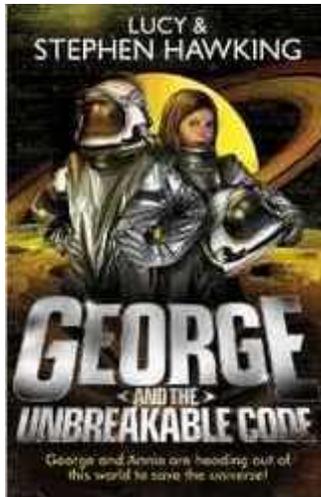
George and the Blue Moon



In my latest book for children, "George and the Blue Moon", George and Annie, set out to solve a mystery set on one of the cosmic waterworlds of space. Is there life under the icy crust? Where did those robots come from and who is controlling them?

Meanwhile, my two young heroes win places on a Mars training programme which has a dangerous and unexpected twist. Suddenly, the best friends find themselves fighting for survival in what feels like the Hunger Games set on the red planet. Packed with space facts and essays from leading scientists, it is my most unpredictable thriller so far!

George and the Big Bang



Stephen and Lucy Hawking's fourth book about the adventures of George and Annie.

Just as thrilling a book as all the ones before it, *George and the Unbreakable Code* also delves deeper and covers topics and ideas that the intended readers might not normally think about.

Overall, a brilliant book as always brought from the fabulous Hawking duo. See a [review](#), or you can order your copy at amazon.com or amazon.co.uk.

George's Cosmic Treasure Hunt



The second in the series of children's books written by Stephen and Lucy Hawking. George and Annie, the middle-school cosmologists, return in this sequel to *George's Secret Key to the Universe*. You can



The third book in the series, with a full colour set of photographs, illustrating the wonder of the cosmos, *George and the Big Bang*, follows George's adventures in the universe. You can order your copy at amazon.com or amazon.co.uk

George's Secret Key to the Universe

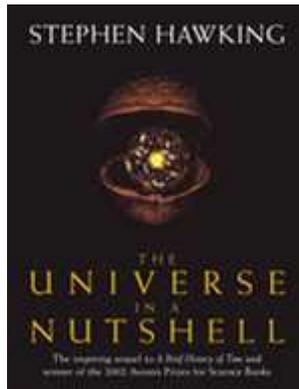


The first in a series of children's books that melds cosmology and adventure, co-authored by Professor Hawking and his daughter Lucy.

order your copy
at [amazon.com](https://www.amazon.com) or [amazon.co.uk](https://www.amazon.co.uk).

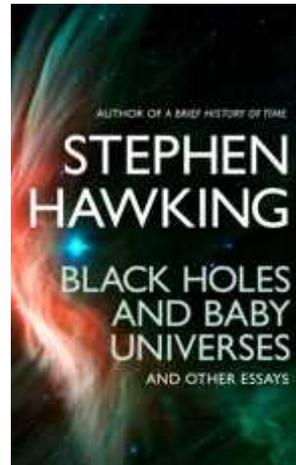
George's best friend Annie needs help. Her scientist father, Eric, is working on a space project - and it's all going wrong. A robot has landed on Mars, but is behaving very oddly. And now Annie has discovered something weird on her dad's super-computer... You can order your copy at [amazon.com](https://www.amazon.com) or [amazon.co.uk](https://www.amazon.co.uk).

The Universe in a Nutshell



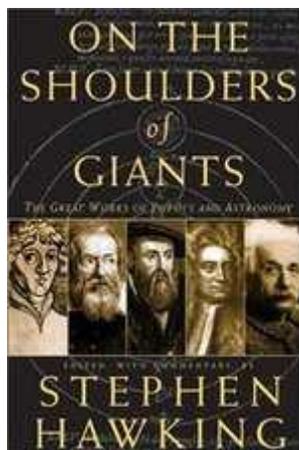
In 200 highly illustrated pages, Hawking is pushing the frontiers of popular physics beyond relativity and quantum theory, past superstring theory and imaginary time, into a dizzying new world of M-theory and branes. Read [more](#), or you can order your copy at [amazon.com](https://www.amazon.com) or [amazon.co.uk](https://www.amazon.co.uk).

Black Holes and Baby Universes



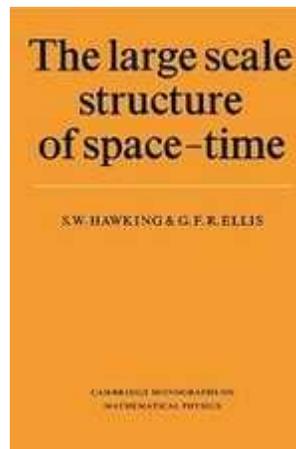
In his first collection of essays and other pieces - on subjects that range from warmly personal to the wholly scientific- Stephen Hawking is revealed variously as the scientist, the man, the concerned world citizen, and - as always - the rigorous and imaginative thinker. You can order your copy at [amazon.com](https://www.amazon.com) or [amazon.co.uk](https://www.amazon.co.uk).

On the Shoulders of Giants



On the Shoulders of Giants tells a compelling

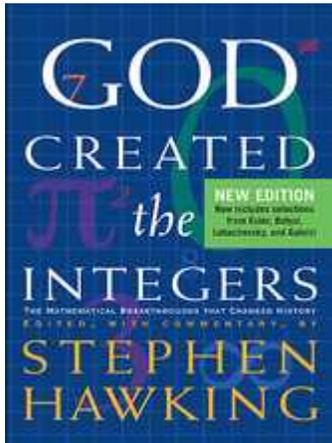
The Large Scale Structure of Space-time



story, using original papers from Einstein, Copernicus, Galilei, Kepler and Newton. Theoretical physicist Stephen Hawking explains how these works changed the course of science, ushering astronomy and physics out of the Middle Ages and into the modern world. Read [more](#), or you can order your copy at [amazon.com](#) or [amazon.co.uk](#).

A textbook for Physicists, this 1973 book explores two predictions of Einstein's General Theory of Relativity: first, that the ultimate destiny of many massive stars is to undergo gravitational collapse and to disappear from view, leaving behind a 'black hole' in space; and secondly, that there will exist singularities in space-time itself. You can order your copy at [amazon.com](#) or [amazon.co.uk](#).

God created the Integers



God Created The Integers is Stephen Hawking's personal choice of the greatest mathematical works in history. The book includes landmark discoveries spanning 2500 years and representing the work of mathematicians such as Euclid, Georg Cantor, Kurt Godel, Augustin Cauchy, Bernard Riemann and Alan Turing. You can order your copy at [amazon.com](#) or [amazon.co.uk](#).







