

Research Publications
Andreas Albrecht

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1. A. Albrecht and P. Steinhardt, *Cosmology for Grand Unified Theories with Radiatively Induced Symmetry Breaking* [Phys. Rev. Lett. **48**, 1220 \(1982\)](#).
2. A. Albrecht, P. Steinhardt, M. Turner, and F. Wilczek, *Reheating an Inflationary Universe* [Phys. Rev. Lett. **48**, 1437 \(1982\)](#).
3. A. Albrecht, S. Dimopoulos, W. Fischler, E. Kolb, S. Raby, and P. Steinhardt, *New Inflation in Supersymmetric Theories* [Nucl. Phys. **B229** , 528 \(1983\)](#)
4. A. Albrecht and P. Steinhardt, *Inflation and Supersymmetry* [Phys. Lett. **131B**, 45, \(1983\)](#).
5. A. Albrecht, L. Jensen, and P. Steinhardt, *Inflation in SU(5) GUT Models Coupled to Gravity* [Nucl. Phys. **B239**, 290 \(1984\)](#).
6. A. Albrecht, *Inflation 1984* in "Fifth Workshop on Grand Unification" K. Kang, H. Fried, P. Frampton, Eds. World Scientific (1984)
7. A. Albrecht and R. Brandenberger, *Realization of New Inflation* [Phys. Rev. D **31** , 1225 \(1985\)](#).
8. A. Albrecht, R. Matzner and R. Brandenberger, *Numerical Analysis of Inflation* [Phys. Rev. D **32**, 1280 \(1985\)](#)
9. A. Albrecht and N. Turok, *Evolution of Cosmic Strings* [Phys. Rev. Lett. **54**, 1868 \(1985\)](#)
10. A. Albrecht, R. Brandenberger and N. Turok, *Gravitational Radiation from Cosmic Strings and the Microwave Background* [Nucl. Phys **B277** , 605 \(1986\)](#),
11. A. Albrecht, *Formation and Evolution of Cosmic Strings* in "Nearly Normal Galaxies: From the Plank Time to the Present". Santa Cruz CA, 1986; S. Faber Ed. Springer Verlag (1987)
12. A. Albrecht, R. Matzner and R. Brandenberger, *Inflation with Generalized Initial Conditions* [Phys. Rev. D **35**, 429 \(1987\)](#)
13. A. Albrecht, *Cosmology for high-energy physicists* in "The Santa Fe TASI", R. Slansky and G. West (Eds.) World Scientific, (1988).

14. A. Albrecht and T. York, *A Topological Picture of Cosmic String Self-Intersection* [Phys. Rev. D 38 2958, \(1988\)](#).
15. A. Albrecht and N. Turok, *Evolution of Cosmic String Networks* [Phys. Rev. D 40 973, \(1989\)](#).
16. A. Albrecht, *Small Scale Structure on Cosmic Strings* in “The formation and evolution of cosmic strings” G. Gibbons, S. Hawking, and T. Vachaspati Eds. Cambridge University Press (1990) ([Scanned preprint here](#))
17. A. Albrecht and A. Stebbins, *Perturbations from cosmic strings in cold dark matter* [Phys. Rev. Lett. 68 2121 \(1992\)](#).
18. A. Albrecht, *Investigating decoherence in a simple system* [Phys. Rev. D. 46 5504 \(1992\)](#)
19. A. Albrecht, *Perturbations from Strings Don't Look Like Strings!* In the proceedings of “Particles and Fields ‘91”, Vancouver BC; August 18-22, 1991. D. Axen, D. Bryman, and M. Comyn Eds. World Scientific (1992). ([Scanned preprint here](#))
20. A. Albrecht, *Two perspectives on a decohering spin* In the proceedings of the “Workshop on the Physical Origins of Time Asymmetry” Mazagon Spain; September 30 to October 4 1991. J. Halliwell, editor, Cambridge University Press 1994 ([Scanned preprint here](#))
21. A. Albrecht and A. Stebbins, *Cosmic strings with a light massive neutrino* [Phys. Rev. Lett. 69 2615 \(1992\)](#)
22. A. Albrecht, *Following a “collapsing” wavefunction* [hep-th/9309051](#), [Phys. Rev. D 48, 3768 \(1993\)](#).
23. A. Albrecht *Locating overlap information in quantum systems* [hep-th/9404066](#) [Phys. Rev. D 50 2744, \(1994\)](#).
24. A. Albrecht, *Some remarks on quantum coherence* *Journal of Modern Optics* **41** 2457, (1994) [hep-th/9402062](#)
25. A. Albrecht, P. Ferreira, M. Joyce, and T. Prokopec, *Inflation and squeezed quantum states* [Phys. Rev. D 50 4807 \(1994\)](#). [[astro-ph/9303001](#)]
26. A. Albrecht, *The theory of everything vs the theory of anything*. In the proceedings of “The international workshop on the Birth of the Universe and Fundamental Forces” Rome, 1994 F. Occionero ed. (Springer Verlag) 1995. [gr-qc/9408023](#)
27. J. Robinson and A. Albrecht, *A Statistic for identifying cosmic string wakes and other sheet-like structure*, *Mon. Not. R. Astron. Soc.* **283**, 733, (1996) [astro-ph/9505123](#)

28. A. Albrecht, D. Coulson, P. Ferreira, and J. Magueijo, *Causality, randomness, and the microwave background* [Phys. Rev. Lett. **76** 1413 \(1996\)](#). [astro-ph/9505030](#)
29. J. Magueijo, A. Albrecht, D. Coulson, and P. Ferreira, *Doppler peaks from active perturbations* [Phys. Rev. Lett. **76** 1413-1416 \(1996\)](#).
30. J. Magueijo, A. Albrecht, P. Ferreira, and D. Coulson, *The structure of Doppler peaks induced by active perturbations* [Phys. Rev. D, **54**, 3727, \(1996\)](#).
31. A. Albrecht, *Coherence and Sakharov Oscillations in the Microwave Sky* in the proceedings of the XXXIst Rencontre de Moriond, 'Microwave Background Anisotropies'. [astro-ph/9612015](#).
32. A. Albrecht *How to falsify scenarios with primordial fluctuations from inflation* in "Critical Dialogues in Cosmology" (proceedings of the Princeton 250th Anniversary conference, June 1996), ed. N. Turok (World Scientific). [astro-ph/9612017](#).
33. A. Albrecht, R. Battye, and J. Robinson, *The case against scaling defect models of cosmic structure formation* [astro-ph/9707129](#), [Phys. Rev. Lett. **79** 4736, \(1997\)](#).
34. A. Albrecht, R. Battye, and J. Robinson, *Parallel Computations Allow Cosmologists to Rule Out a Theory of Galaxy Formation* PCW '97, Canberra 1997
35. A. Albrecht, R. Battye, and J. Robinson, *A detailed study of defect models of cosmic structure formation*, Imperial/TP/97-98/9, [astro-ph/9711121](#) [Phys. Rev. D **59**, 023508 \(1999\)](#)
36. R. Battye, J. Robinson, and A. Albrecht *Structure formation by cosmic strings with a Cosmological constant*, [astro-ph/9711336](#) [Phys.Rev.Lett. **80** 4847 \(1998\)](#)
37. A. Albrecht, *What is the future of causal models of cosmic structure formation?* in the proceedings of the "International Workshop on Particle Physics and the Early Universe" Ambleside, September 1997, L. Roszkowski Ed. (1998) [astro-ph/9802135](#)
38. A. Albrecht, *Cosmology with a time-varying speed of light* in the proceedings of "COSMO-98", D. Caldwell Ed., AIP (1999) [astro-ph/9904185](#)
39. A. Lewin, A. Albrecht and J. Magueijo *A new statistic for picking out Non-Gaussianity in the CMB* [astro-ph/9804283](#), [MNRAS **302** 141 \(1999\)](#)
40. J. Weller, R. Battye and A. Albrecht, *Reionization by active sources and its effects on the cosmic microwave background*. [astro-ph/9808269](#). [Phys. Rev. D **60**, 103520 \(1999\)](#)
41. Albrecht and J. Magueijo, *A time varying speed of light as a solution to cosmological puzzles*. [astro-ph/9811018](#), [Phys. Rev. D **59**, 043516 \(1999\)](#)

42. A. Lewin and A. Albrecht, *Can inflationary models of cosmic perturbations evade the secondary oscillation test?* [astro-ph/9908061](#) *Phys. Rev. D* **64**, 023514 (2001)
43. A. Albrecht and C. Skordis, *Phenomenology of a realistic accelerating universe using only Planck-scale physics* [astro-ph/9908085](#) *Phys. Rev Lett* **84** 2076 (2000)
44. A. Albrecht *Cosmic Inflation Lectures* presented at the NATO Advanced Studies Institute "Structure Formation in the Universe", Cambridge 1999. Kluwer, R. Crittenden and N. Turok Eds [astro-ph/0007247](#). Also featured on [NASA's "Level 5" Knowledgebase for Extragalactic Astronomy and Cosmology](#). Main page: <http://nedwww.ipac.caltech.edu/level5/>
45. J. Weller and A. Albrecht *Opportunities for future supernova studies of cosmic acceleration* [astro-ph/0008314](#) *Phys. Rev Lett* **86** 1939 (2001)
46. A. Albrecht *Defect models of cosmic structure in light of the new CMB data* In [the proceedings of the XXXVth Rencontres de Moriond](#) "Energy Densities in the Universe" [astro-ph/0009129](#)
47. C. Skordis and A. Albrecht *Planck-scale quintessence and the physics of structure formation* [astro-ph/0012195](#) *Phys.Rev. D***66** (2002) 043523.
48. A. Albrecht, C. Burgess, F. Ravndal and C. Skordis *Exponentially Large Extra Dimensions* [hep-th/0105261](#) *Phys.Rev. D***65** (2002) 123506
49. J. Weller and A. Albrecht *Future Supernovae observations as a probe of dark energy* [astro-ph/0106079](#) *Phys.Rev. D***65** (2002) 103512
50. A. Albrecht, C.P. Burgess, F. Ravndal and C. Skordis *Natural Quintessence and Large Extra Dimensions* [astro-ph/0107573](#). *Phys.Rev. D***65** (2002) 123507
51. A. Albrecht, J. Frieman, M. Trodden *Early Universe Cosmology and Tests of Fundamental Physics: Report of the P4.8 Working Subgroup, Snowmass 2001* [hep-ph/0111080](#) (proceedings published [here](#) on the web)
52. A. Albrecht, *Cosmic Inflation and the Arrow of Time*, in "Science and Ultimate Reality: Quantum Theory, Cosmology and Complexity", honoring John Wheeler's 90th birthday. J. D. Barrow, P.C.W. Davies, & C.L. Harper eds. Cambridge University Press (2004) [astro-ph/0210527](#)
53. A. Albrecht, N. Kaloper, and Y.-S. Song, *Holographic Limitations of the Effective Field Theory of Inflation* [hep-th/0211221](#)
54. B. Gold and A. Albrecht, *Next generation tests of cosmic inflation*, *Phys.Rev. D***68** (2003) 103518 [astro-ph/0301050](#)
55. A. Albrecht and L. Sorbo *Can the universe afford inflation?* [hep-th/0405270](#) *Phys. Rev. D***70** (2004) 063528

56. Lloyd Knox, A. Albrecht, and Y.S. Song *Weak Lensing and Supernovae: Complementary Probes of Dark Energy* [astro-ph/0408141](#) Proceedings of NOAO Workshop on Observing Dark Energy, Tucson, Arizona, 18-20 Mar 2004.
57. A. Albrecht *et al.* *Report of the Dark Energy Task Force* [arXiv:astro-ph/0609591](#) (2006)
58. A. Albrecht and G. Bernstein. *Dark energy figures of merit in higher dimensions* [astro-ph/0608269](#) *Phys. Rev. D* **75**, 103003 (2007).
59. A. Albrecht and A. Iglesias *The clock ambiguity and the emergence of physical laws* [arXiv:0708.2743](#) *Phys. Rev. D* **77**, 063506 (2008).
60. A. Albrecht *The case for an aggressive program of dark energy probes* [arXiv:0710.0867](#) (2007). *AIP Conf. Proc.* Nov. 20, 2007, **957**, pp. 3-12 PARTICLES, STRINGS, AND COSMOLOGY: *13th International Symposium on Particles, Strings, and Cosmology-PASCOS 2007*;
61. M. Barnard, A. Abrahamse, A. Albrecht B. Bozek, M. Yashar *Exploring Parameter Constraints on Quintessential Dark Energy: The Albrecht-Skordis Model* [arXiv:0712.2875](#) *Phys. Rev. D* **77**, 103502 (2008)
62. A. Abrahamse, A. Albrecht, M. Barnard, B. Bozek *Exploring Parameter Constraints on Quintessential Dark Energy: The Pseudo-Nambu Goldstone Boson Model* [arXiv:0712.2879](#) *Phys. Rev. D* **77**, 103503 (2008)
63. B. Bozek, A. Abrahamse, A. Albrecht, M. Barnard *Exploring Parameter Constraints on Quintessential Dark Energy: The Exponential Model* [arXiv:0712.2884](#) *Phys. Rev. D* **77**, 103504 (2008)
64. M. Barnard, A. Abrahamse, A. Albrecht B. Bozek, M. Yashar *A measure of the impact of future dark energy experiments based on discriminating power among quintessence models* [arXiv:0804.0413](#) *Phys.Rev.D* **78**:043528 (2008)
65. A. Albrecht and A. Iglesias *The clock ambiguity: Implications and new developments.* Proceedings of “The Origin of Time’s Arrow” New York Academy of Sciences Press (2008) [arXiv:0805.4452](#).
66. M. Yashar, B. Bozek, A. Abrahamse, A. Albrecht, M. Barnard *Exploring Parameter Constraints on Quintessential Dark Energy: The Inverse Power Law Model* [arXiv:0811.2253](#) *Phys.Rev.D* **79**:103004 (2009)
67. A. Albrecht *et al.* *Findings of the Joint Dark Energy Mission Figure of Merit Science Working Group* [arXiv:astro-ph/0901.0721](#) (2009)
68. B. Bozek, A. Albrecht and D. Phillips *Curvature Constraints from the Causal Entropic Principle* [arXiv:0902.1171](#) *Phys. Rev. D* **80**:023527 (2009)

69. R. Scranton *et al.* *The case for Deep, Wide-Field Cosmology* [arXiv:0902.2590](#)
70. H. Zhan *et al.* *Exploring Dark Energy with Next-Generation Photometric Redshift Surveys* [arXiv:0902.2599](#)
71. D. Phillips and A. Albrecht. *Effects of Inhomogeneity on the Causal Entropic prediction of Lambda.* [arXiv:0903.1622](#) Phys.Rev. D84 (2011) 123530
72. A. Albrecht *de Sitter equilibrium as a fundamental framework for cosmology*, to appear in the proceedings of the DICE2008 conference, Thomas Elze, ed. [arXiv:0906.1047](#)
73. A. Albrecht and A. Iglesias *Lorentz symmetry from a random Hamiltonian* [arXiv:1003.2566](#) [Phys.Rev. D91 \(2015\) 4, 043529](#)
74. A. Albrecht *Cosmic Curvature from de Sitter equilibrium cosmology* [arXiv:1104.3315](#) Phys.Rev.Lett. 107 (2011) 151102
75. A. Ulvestad and A. Albrecht *Creating universes with thick walls* [arXiv:1202.5936 \[gr-qc\]](#) Phys.Rev. D85 (2012) 103527
76. A. Albrecht and D. Phillips *Origin of probabilities and their application to the multiverse.* [arXiv:1212.0953](#) (2012) PRD in press (2014) Phys.Rev. D90 (2014) 12, 123514
77. A. Hernley, A. Albrecht and T. Dray *Toy model studies of tuning and typicality with an eye toward cosmology* [arXiv:1301.5929](#) Phys. Rev. D87 (2013) 123515
78. A. Scacco and A. Albrecht *Dark matter annihilations in the causal diamond* [arXiv:1309.0048](#) [Phys. Rev. D 89, 043513 \(2014\)](#)
79. A. Albrecht *Les Houches Lectures on Inflation (slides here)* in *Post-Planck Cosmology: Lecture notes of the Les Houches Summer School: Volume 100, July 2013* (Oxford, 2015) DOI: 10.1093/acprof:oso/9780198728856.001.0001
80. A. Albrecht and H. Stoltenberg *Eternal Inflation with Arrival Terminals* [arXiv:1408.5179](#) (2014) [Phys.Rev. D91 \(2015\) 2, 023503](#)
81. A. Albrecht *Tuning, Ergodicity, Equilibrium and Cosmology* [arXiv:1401.7309](#) Phys. Rev. D 91, 103510 (2015)
82. H. Stoltenberg and A. Albrecht *No Firewalls or Information Problem for Black Holes Entangled with Large Systems* [arXiv:1408.5179](#) [Phys.Rev. D91 \(2015\) 2, 024004](#)
83. A. Albrecht, N. Bolis and R. Holman *Cosmological Consequences of Initial State Entanglement* [arXiv:1408.6859](#) JHEP 1411 (2014) 093
84. A. Albrecht, R. Holman and B. Richard *Feeling de Sitter* [arXiv:1410.2612](#) [Phys.Rev. D91 \(2015\) 4, 043517](#)

85. D. Phillips, A. Scacco and A. Albrecht *Holographic bounds and finite inflation* [arXiv:1410.6065](https://arxiv.org/abs/1410.6065) [Phys.Rev. D91 \(2015\) 4, 043513](https://doi.org/10.1142/PTD20150004)
86. A. Albrecht, R. Holman and B. Richard *Spinodal Instabilities and Super-Planckian Excursions in Natural Inflation* [arXiv:1412.6879](https://arxiv.org/abs/1412.6879), [Phys. Rev. Lett. 114, 171301](https://doi.org/10.1103/PhysRevLett.114.171301)
87. A. Scacco and A. Albrecht *Transients in finite inflation* [arXiv:1503.04872](https://arxiv.org/abs/1503.04872) [Phys. Rev. D 92, 083506](https://doi.org/10.1142/PTD201500092)
88. N. Bolis, A. Albrecht and Rich Holman *Modifications to Cosmological Power Spectra from Scalar-Tensor Entanglement and their Observational Consequences* [arXiv:1605.01008](https://arxiv.org/abs/1605.01008) [JCAP 1612 \(2016\) 011](https://doi.org/10.1088/1475-2875/2016/01/011)
89. S. Luo, H. Stoltenberg and A. Albrecht *Multipartite Entanglement and Firewalls* [arXiv:1611.02647](https://arxiv.org/abs/1611.02647) [Phys. Rev. D 95, 064039 \(2017\)](https://doi.org/10.1142/PTD201700095)
90. A. Arrasmith, A. Albrecht, W. H. Zurek *Decoherence of black hole superpositions* [arXiv:1708.09353](https://arxiv.org/abs/1708.09353), [Nature Commun. 10 \(2019\) no.1, 1024](https://doi.org/10.1038/s42005-019-0102-4)
91. A. Albrecht, S. Kanno and M. Sasaki *Quantum entanglement in de Sitter space with a wall, and the decoherence of bubble universes* [arXiv:1802.08794](https://arxiv.org/abs/1802.08794) ([Phys.Rev. D97 \(2018\) no.8, 083520](https://doi.org/10.1142/PTD201800097))
92. A. Albrecht, N. Bolis and R. Holman *Cosmic Inflation: The Most Powerful Microscope in the Universe* [arXiv:1806.00392](https://arxiv.org/abs/1806.00392)
93. N. Bolis, A. Albrecht and R. Holman *Non-Gaussianity from Entanglement During Inflation* ([arXiv:1902.07567](https://arxiv.org/abs/1902.07567)) [JCAP07 \(2019\) 021](https://doi.org/10.1088/1475-2875/2019/02/021)
94. Z. Holmes, A. Arrasmith, B. Yan, P. Coles, A. Albrecht, A. Sornborger *Barren plateaus preclude learning scramblers* [arXiv \[2009.14808\]](https://arxiv.org/abs/2009.14808) [Phys. Rev. Lett. 126, 190501 \(2021\)](https://doi.org/10.1103/PhysRevLett.126.190501)
95. A. Albrecht, R. Baunach and A. Arrasmith [\[2105.14017\]](https://arxiv.org/abs/2105.14017) [Einselection, Equilibrium and Cosmology \(arxiv.org\)](https://doi.org/10.1142/PTD202200106) [Phys. Rev. D 106, 123507 \(2022\)](https://doi.org/10.1142/PTD202200106)
96. A. Albrecht, R. Baunach and A. Arrasmith [\[2105.14040\]](https://arxiv.org/abs/2105.14040) [Adapted Caldeira-Leggett Model \(arxiv.org\)](https://doi.org/10.1142/PTD202200106)
97. R. Baunach, A. Albrecht and A. Arrasmith [\[2105.14032\]](https://arxiv.org/abs/2105.14032) [Copycat process in the early stages of einselection \(arxiv.org\)](https://doi.org/10.1142/PTD202200106)
98. A. Albrecht [\[2202.12353\]](https://arxiv.org/abs/2202.12353) [Equilibration and "Thermalization" in the Adapted Caldeira-Leggett model \(arxiv.org\)](https://doi.org/10.1088/1751-8121/ab9121) [Entropy 2022, 24, 316](https://doi.org/10.1088/1751-8121/ab9121)
99. A. Adil, A. Albrecht and L. Knox [\[2207.10235\]](https://arxiv.org/abs/2207.10235) [Quintessential Cosmological Tensions \(arxiv.org\)](https://doi.org/10.1142/PTD202200106)
100. A. Adil *et al.* [\[2211.11079\]](https://arxiv.org/abs/2211.11079) [Entanglement masquerading in the CMB \(arxiv.org\)](https://doi.org/10.1142/PTD202200106)

101. A. Adil *et al.* [\[2403.10895\] A Search for Classical Subsystems in Quantum Worlds \(arxiv.org\)](#)