

# Introduction to T0 Theory

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\*Introduction

This book presents the current state of the T0 time–mass duality framework and its applications to particle masses, fundamental constants, quantum mechanics, gravitation, and cosmology.

The main body of the book consists of a set of core T0 documents. These chapters reflect the present understanding of the theory and its quantitative consequences. Whenever possible, the material has been reorganized and unified so that the structure of the theory becomes as transparent as possible.

At the end of the book, several older documents are included in an appendix. These texts represent earlier stages of the development of the T0 framework. They were not removed, because they make the evolution of the ideas and the refinement of the formulas visible. In many cases, one can see how approximations were improved, how special cases were generalized, and how new empirical data helped to sharpen or correct earlier arguments.

The “live” version of the theory is maintained in a public GitHub repository:

<https://github.com/jpascher/T0-Time-Mass-Duality>

The LaTeX sources of the chapters in this book are taken from that repository. If conceptual or numerical errors are found, they are corrected there first. This means that the PDF version of the book you are reading is a snapshot of a continuously evolving project. For the most recent version of the documents, including new appendices or corrections, the GitHub repository should always be considered the primary reference.

The intention of this compilation is twofold:

- to provide a coherent, readable path through the core ideas and results of the T0 framework;
- to document, in the appendix, the historical development of these ideas, including false starts, intermediate formulations, and early fits to experimental data.

Readers who are mainly interested in the current formulation of the theory may focus on the core chapters. Readers who are also interested in the reasoning and trial-and-error process behind the theory are invited to study the appendix material in parallel.

## References

- [1] J. Pascher, *T0 Theory: Time-Mass Duality*, 2024.
- [2] J. Pascher, *T0 Theory: Fundamentals*, 2025.
- [3] J. Pascher, *T0 Theory: Quantum Mechanics*, 2025.
- [4] J. Pascher, *T0 Theory: SI Units*, 2025.
- [5] J. Pascher, *T0 Theory: The g-2 Anomaly*, 2025.
- [6] J. Pascher, *T0 Theory: CMB Analysis*, 2025.
- [7] A. Einstein, *On the Electrodynamics of Moving Bodies*, Annalen der Physik, 1905.
- [8] P.A.M. Dirac, *The Quantum Theory of the Electron*, Proc. Roy. Soc. A, 1928.
- [9] M. Planck, *On the Theory of the Energy Distribution Law*, 1900.
- [10] E. Mach, *Die Mechanik in ihrer Entwicklung*, 1883.
- [11] Various Authors, *100 Authors Against Einstein*, 1931.
- [12] H. Dingle, *Science at the Crossroads*, 1972.
- [13] J. Terrell, *Invisibility of the Lorentz Contraction*, Phys. Rev., 1959.
- [14] R. Penrose, *The Apparent Shape of a Relativistically Moving Sphere*, Proc. Cambridge Phil. Soc., 1959.
- [15] R. Penrose, *Twistor Algebra*, J. Math. Phys., 1967.
- [16] R. Penrose, *The Road to Reality*, 2004.
- [17] J. Terrell et al., *Modern Terrell-Penrose Visualization*, 2025.
- [18] D. Weiskopf, *Visualization of Four-dimensional Spacetimes*, 2000.
- [19] T. Müller, *Visual Appearance of Relativistically Moving Objects*, 2014.
- [20] S. Hossenfelder, *YouTube: The Terrell Effect*, 2025.
- [21] C. Rovelli, *Quantum Gravity*, Cambridge University Press, 2004.
- [22] T. Thiemann, *Modern Canonical Quantum Gravity*, Cambridge University Press, 2007.
- [23] A. Ashtekar, J. Lewandowski, *Background Independent Quantum Gravity*, Class. Quant. Grav., 2004.
- [24] T. Jacobson, *Thermodynamics of Spacetime*, Phys. Rev. Lett., 1995.
- [25] J. Maldacena, *The Large N Limit of Superconformal Field Theories*, Adv. Theor. Math. Phys., 1998.

- [26] J. Polchinski, *String Theory*, Cambridge University Press, 1998.
- [27] L. Susskind, *The World as a Hologram*, J. Math. Phys., 1995.
- [28] E. Verlinde, *On the Origin of Gravity*, JHEP, 2011.
- [29] F. Hoyle, *A New Model for the Expanding Universe*, MNRAS, 1948.
- [30] H. Bondi, T. Gold, *The Steady-State Theory*, MNRAS, 1948.
- [31] F. Zwicky, *On the Redshift of Spectral Lines*, Proc. Nat. Acad. Sci., 1929.
- [32] C. Lopez-Corredoira, *Tests of Cosmological Models*, Int. J. Mod. Phys. D, 2010.
- [33] E. Lerner, *Evidence for a Non-Expanding Universe*, 2014.
- [34] A. Albrecht, J. Magueijo, *Variable Speed of Light*, Phys. Rev. D, 1999.
- [35] J. Barrow, *Cosmologies with Varying Light Speed*, Phys. Rev. D, 1999.
- [36] A. Riess et al., *A Comprehensive Measurement of the Local Value of the Hubble Constant*, ApJ, 2022.
- [37] DESI Collaboration, *DESI Year 1 Results*, 2025.
- [38] E. Di Valentino et al., *Planck Evidence for a Closed Universe*, Nat. Astron., 2021.
- [39] P. Di Francesco et al., *Conformal Field Theory*, Springer, 1997.
- [40] Particle Data Group, *Review of Particle Physics*, 2024.
- [41] CODATA, *Recommended Values of Fundamental Constants*, 2019.
- [42] D. Newell et al., *The CODATA 2017 Values of  $h$ ,  $e$ ,  $k$ , and  $N_A$* , Metrologia, 2018.
- [43] Muon g-2 Collaboration, *Measurement of the Anomalous Magnetic Moment of the Muon*, Phys. Rev. Lett., 2023.
- [44] Fermilab, *Muon g-2 Results*, 2023.
- [45] ATLAS Collaboration, *Measurements at the LHC*, 2023.
- [46] ATLAS Collaboration, *Higgs Boson Properties*, 2023.
- [47] CMS Collaboration, *Top Quark Measurements*, 2023.
- [48] CMS Collaboration, *Heavy Ion Collisions*, 2024.
- [49] ALICE Collaboration, *Quark-Gluon Plasma Studies*, 2023.
- [50] M. Kasevich et al., *Atom Interferometry*, 2023.
- [51] A. Ludlow et al., *Optical Atomic Clocks*, Rev. Mod. Phys., 2015.
- [52] S. Brewer et al., *Al<sup>+</sup> Optical Clock*, Phys. Rev. Lett., 2019.
- [53] LISA Collaboration, *LISA Mission*, 2017.

- [54] L. Nottale, *Fractal Space-Time and Microphysics*, World Scientific, 1993.
- [55] M.S. El Naschie, *E-Infinity Theory*, Chaos Solitons Fractals, 2004.
- [56] J.A. Wheeler, *Information, Physics, Quantum*, 1990.
- [57] J. Barbour, *The End of Time*, Oxford University Press, 1999.
- [58] D. Sciama, *On the Origin of Inertia*, MNRAS, 1953.
- [59] K. Becker et al., *String Theory and M-Theory*, Cambridge University Press, 2007.
- [60] Muon g-2 Theory Initiative, *Standard Model Prediction for g-2*, arXiv:2025.
- [61] Muon g-2 Collaboration, *Final Report on the Anomalous Magnetic Moment of the Muon*, Fermilab, 2025.
- [62] J. Pascher, *T0 Theory: Complete Framework*, viXra, 2025.
- [63] M.E. Peskin and D.V. Schroeder, *An Introduction to Quantum Field Theory*, Westview Press, 1995.
- [64] R.H. Parker et al., *Measurement of the Fine-Structure Constant*, Science, 2018.
- [65] L. Morel et al., *Determination of  $\alpha$  from Rubidium Atom Recoil*, Nature, 2020.
- [66] T. Aoyama et al., *Theory of the Electron Anomalous Magnetic Moment*, Phys. Rep., 2020.
- [67] X. Fan et al., *Hadronic Contributions from Lattice QCD*, Phys. Rev. D, 2023.
- [68] D. Hanneke et al., *New Measurement of the Electron g-2*, Phys. Rev. Lett., 2008.
- [69] J. Pascher, *Higgs Connection in T0 Theory*, 2025.
- [70] J. Pascher, *T0 Theory and SI Units*, 2025.
- [71] J. Pascher, *Gravitational Constant in T0 Framework*, 2025.
- [72] J. Pascher, *Fine Structure Constant Analysis*, 2025.
- [73] J.S. Bell, *Muon Studies*, 1966.
- [74] J. Pascher, *Quantum Field Theory in T0*, 2025.
- [75] Planck Collaboration, *Planck 2018 Results*, A&A, 2018.
- [76] J. Pascher, *T0 Theory Foundations*, 2025.
- [77] J. Pascher, *Geometric Formalism in T0*, 2025.
- [78] A. Riess et al., *Hubble Constant Measurements*, ApJ, 2019.
- [79] J. Pascher, *T0 Kosmologie*, 2025.
- [80] S. Hossenfelder, *Single Clock Video*, YouTube, 2025.

- [81] Various, *Video References*, 2025.
- [82] C.S. Unnikrishnan, *Gravity Studies*, 2004.
- [83] A. Peratt, *Plasma Cosmology*, 1992.
- [84] J. Pascher, *T0 Time-Mass Extension*, 2025.
- [85] J. Pascher, *T0 g-2 Extension*, 2025.
- [86] J. Pascher, *T0 Networks*, 2025.
- [87] W. Adams, *Gravitational Redshift*, 1925.
- [88] N. Ashby, *Relativity in GPS*, Living Rev. Rel., 2003.
- [89] B. Bertotti et al., *Cassini Doppler Test*, Nature, 2003.
- [90] A. Bolton et al., *Gravitational Lensing*, 2008.
- [91] M. Born, *Einstein's Theory of Relativity*, Dover, 2013.
- [92] C. Brans and R.H. Dicke, *Mach's Principle*, Phys. Rev., 1961.
- [93] P.A.M. Dirac, *Quantum Mechanics*, Proc. Roy. Soc., 1927.
- [94] P. Duhem, *Theory of Physics*, 1906.
- [95] A. Einstein, *Special Relativity*, Ann. Phys., 1905.
- [96] R. Feynman, *QED: The Strange Theory of Light and Matter*, 2006.
- [97] D. Griffiths, *Introduction to Quantum Mechanics*, 2017.
- [98] J.D. Jackson, *Classical Electrodynamics*, 1999.
- [99] T. Kaluza, *Five-Dimensional Theory*, 1921.
- [100] O. Klein, *Quantum Theory and Relativity*, 1926.
- [101] T. Kuhn, *Structure of Scientific Revolutions*, 1962.
- [102] T. Kuhn, *Essential Tension*, 1977.
- [103] A. Ludlow et al., *Optical Atomic Clocks*, Rev. Mod. Phys., 2015.
- [104] J.C. Maxwell, *Treatise on Electricity and Magnetism*, 1873.
- [105] S. McGaugh et al., *Radial Acceleration Relation*, Phys. Rev. Lett., 2016.
- [106] P. Mohr et al., *CODATA Values*, Rev. Mod. Phys., 2016.
- [107] Particle Data Group, *Review of Particle Physics*, Prog. Theor. Exp. Phys., 2020.
- [108] R. Parker et al., *Measurement of  $\alpha$* , Science, 2018.
- [109] M. Peskin and D. Schroeder, *QFT*, 1995.

- [110] M. Planck, *Quantum Theory*, 1900.
- [111] Planck Collaboration, *Planck 2020 Results*, 2020.
- [112] H. Poincaré, *Dynamics of the Electron*, 1905.
- [113] R.V. Pound and G.A. Rebka, *Gravitational Redshift*, Phys. Rev. Lett., 1960.
- [114] W.V. Quine, *Two Dogmas of Empiricism*, 1951.
- [115] T. Quinn et al., *Gravitational Constant*, 2013.
- [116] L. Randall and R. Sundrum, *Extra Dimensions*, Phys. Rev. Lett., 1999.
- [117] A. Riess et al., *Type Ia Supernovae*, AJ, 1998.
- [118] I. Shapiro et al., *Time Delay Test*, Phys. Rev. Lett., 1971.
- [119] A. Sommerfeld, *Fine Structure*, 1916.
- [120] S. Suyu et al., *Time Delay Cosmography*, MNRAS, 2017.
- [121] J. Pascher, *T0 Theory*, 2025.
- [122] J. Pascher, *Fine Structure in T0*, 2025.
- [123] J.-P. Uzan, *Constants Variation*, Rev. Mod. Phys., 2003.
- [124] J.K. Webb et al., *Fine Structure Constant*, Phys. Rev. Lett., 2001.
- [125] S. Weinberg, *Cosmological Constant*, Rev. Mod. Phys., 1979.
- [126] S. Weinberg, *Cosmological Constant Problem*, 1989.
- [127] S. Weinberg, *Quantum Theory of Fields*, 1995.
- [128] C. Will, *Theory and Experiment in Gravitational Physics*, 2014.
- [129] P.A.M. Dirac, *Principles of Quantum Mechanics*, 1930.
- [130] A. Einstein, *Cosmological Considerations*, 1917.
- [131] JWST Collaboration, *Early Universe Observations*, 2023.
- [132] KATRIN Collaboration, *Neutrino Mass*, 2022.
- [133] J. Pascher, *T0 Fundamentals*, 2025.
- [134] J. Pascher, *g-2 Analysis Rev9*, 2025.
- [135] J. Pascher, *ML Addendum*, 2025.
- [136] J. Pascher, *Beta Derivation*, 2025.
- [137] J. Pascher, *CMB Analysis in T0*, 2025.
- [138] J. Pascher, *Cosmos in T0 Theory*, 2025.

- [139] J. Pascher, *Derivation of Beta*, 2025.
- [140] J. Pascher, *Gravitation in T0*, 2025.
- [141] J. Pascher, *Lagrangian in T0*, 2025.
- [142] J. Pascher, *Lagrangian Framework*, 2025.
- [143] J. Pascher, *Muon g-2 in T0*, 2025.
- [144] J. Pascher, *Pragmatic Approach*, 2025.
- [145] J. Pascher, *T0 Energy Formalism*, 2025.
- [146] J. Pascher, *Unified T0 Theory*, 2025.
- [147] Science Daily, *Physics News*, 2025.
- [148] S. Weinberg, *The Cosmological Constant Problem*, Rev. Mod. Phys., 1989.
- [149] Wikipedia, *Bell's Theorem*, 2025.
- [150] B. van Fraassen, *The Scientific Image*, Oxford University Press, 1980.
- [151] J. Pascher, *Extended Lagrangian Formalism*, 2025.
- [152] J. Pascher, *Mathematical Structure of T0 Theory*, 2025.
- [153] J. Terrell, *Single Clock Nature*, Nature, 2024.
- [154] J. Pascher, *Unified T0 Framework*, 2025.
- [155] J. Pascher, *Machine Learning Addendum to T0 Theory*, 2025.
- [156] C. S. Unnikrishnan, *On the Nature of Gravitational Waves*, Pramana, 2004.
- [157] W. S. Adams, *The Relativity Displacement of the Spectral Lines*, PNAS, 1925.
- [158] N. Ashby, *Relativity and the GPS*, Living Reviews, 2003.
- [159] B. Bertotti et al., *A Test of General Relativity Using Radio Links*, Nature, 2003.
- [160] A. S. Bolton et al., *Strong Gravitational Lens Halo*, ApJ, 2008.
- [161] M. Born, *Atomic Physics*, Dover, 2013.
- [162] C. Brans, R. H. Dicke, *Mach's Principle and a Relativistic Theory of Gravitation*, Phys. Rev., 1961.
- [163] P. A. M. Dirac, *The Quantum Theory of the Electron*, Proc. R. Soc., 1927.
- [164] P. Duhem, *La Théorie Physique*, 1906.
- [165] A. Einstein, *Zur Elektrodynamik bewegter Körper*, Ann. Phys., 1905.
- [166] R. P. Feynman, *QED: The Strange Theory of Light and Matter*, Princeton, 2006.

- [167] D. J. Griffiths, *Introduction to Electrodynamics*, 4th ed., Cambridge, 2017.
- [168] J. D. Jackson, *Classical Electrodynamics*, 3rd ed., Wiley, 1999.
- [169] T. Kaluza, *Zum Unitätsproblem der Physik*, Sitz. Preuss. Akad. Wiss., 1921.
- [170] O. Klein, *Quantentheorie und fünfdimensionale Relativitätstheorie*, Z. Phys., 1926.
- [171] T. S. Kuhn, *The Structure of Scientific Revolutions*, Chicago, 1962.
- [172] T. S. Kuhn, *The Essential Tension*, Chicago, 1977.
- [173] A. D. Ludlow et al., *Optical Atomic Clocks*, Rev. Mod. Phys., 2015.
- [174] J. C. Maxwell, *A Treatise on Electricity and Magnetism*, Oxford, 1873.
- [175] S. S. McGaugh et al., *Radial Acceleration Relation*, Phys. Rev. Lett., 2016.
- [176] P. J. Mohr et al., *CODATA 2014*, Rev. Mod. Phys., 2016.
- [177] Particle Data Group, *Review of Particle Physics*, Prog. Theor. Exp. Phys., 2020.
- [178] R. H. Parker et al., *Measurement of the Fine-Structure Constant*, Science, 2018.
- [179] M. E. Peskin, D. V. Schroeder, *An Introduction to Quantum Field Theory*, Westview, 1995.
- [180] M. Planck, *Zur Theorie des Gesetzes der Energieverteilung*, Verh. Dtsch. Phys. Ges., 1900.
- [181] Planck Collaboration, *Planck 2018 Results*, A&A, 2020.
- [182] H. Poincaré, *Sur la Dynamique de l'Électron*, C. R. Acad. Sci., 1905.
- [183] R. V. Pound, G. A. Rebka, *Gravitational Red-Shift in Nuclear Resonance*, Phys. Rev. Lett., 1960.
- [184] J. Pascher, *Quantum Field Theory in T0 Framework*, 2025.
- [185] W. V. O. Quine, *Two Dogmas of Empiricism*, Phil. Rev., 1951.
- [186] T. Quinn et al., *Improved Determination of G*, Phys. Rev. Lett., 2013.
- [187] L. Randall, R. Sundrum, *A Large Mass Hierarchy*, Phys. Rev. Lett., 1999.
- [188] A. G. Riess et al., *Observational Evidence from Supernovae*, AJ, 1998.
- [189] I. I. Shapiro, *Fourth Test of General Relativity*, Phys. Rev. Lett., 1971.
- [190] A. Sommerfeld, *Zur Quantentheorie der Spektrallinien*, Ann. Phys., 1916.
- [191] S. H. Suyu et al., *HOLiCOW*, MNRAS, 2017.
- [192] J. Pascher, *T0 Theory: Foundations*, 2025.
- [193] J. Pascher, *Fine-Structure Constant in T0*, 2025.

- [194] J. Pascher, *SI Units in T0 Framework*, 2025.
- [195] J. Pascher, *T0 Fine-Structure Analysis*, 2025.
- [196] J. Pascher, *T0 g-2 Extension*, 2025.
- [197] J. Pascher, *Gravitational Constant in T0*, 2025.
- [198] J. Pascher, *T0 Networks*, 2025.
- [199] J. Pascher, *Time-Mass Extension in T0*, 2025.
- [200] J.-P. Uzan, *The Fundamental Constants and Their Variation*, Rev. Mod. Phys., 2003.
- [201] J. K. Webb et al., *Further Evidence for Cosmological Evolution of the Fine Structure Constant*, Phys. Rev. Lett., 2001.
- [202] S. Weinberg, *A Model of Leptons*, Phys. Rev. Lett., 1979.
- [203] S. Weinberg, *The Cosmological Constant Problem*, Rev. Mod. Phys., 1989.
- [204] S. Weinberg, *The Quantum Theory of Fields*, Cambridge, 1995.
- [205] C. M. Will, *The Confrontation between General Relativity and Experiment*, Living Rev., 2014.
- [206] A. Albrecht, J. Magueijo, *A Time Varying Speed of Light*, Phys. Rev. D, 1999.
- [207] ALICE Collaboration, *Measurement Results*, CERN, 2023.
- [208] A. Ashtekar, *Background Independent Quantum Gravity*, Class. Quant. Grav., 2004.
- [209] ATLAS Collaboration, *Physics Results*, CERN, 2023.
- [210] ATLAS Collaboration, *Higgs Measurements*, CERN, 2023.
- [211] J. Barbour, *The End of Time*, Oxford, 1999.
- [212] J. D. Barrow, *Cosmologies with Varying Light Speed*, Phys. Rev. D, 1999.
- [213] K. Becker et al., *String Theory and M-Theory*, Cambridge, 2007.
- [214] J. S. Bell, *On the Einstein Podolsky Rosen Paradox*, Physics, 1964.
- [215] H. Bondi, T. Gold, *The Steady-State Theory*, MNRAS, 1948.
- [216] S. M. Brewer et al., *27Al+ Quantum-Logic Clock*, Phys. Rev. Lett., 2019.
- [217] CMS Collaboration, *Top Quark Measurements*, CERN, 2023.
- [218] CMS Collaboration, *Physics Results*, CERN, 2024.
- [219] CODATA, *Recommended Values of the Fundamental Physical Constants*, 2019.
- [220] DESI Collaboration, *Cosmological Results*, 2025.

- [221] H. Dingle, *Science at the Crossroads*, Martin Brian, 1972.
- [222] P. A. M. Dirac, *The Principles of Quantum Mechanics*, Oxford, 1930.
- [223] E. Di Valentino et al., *In the Realm of the Hubble Tension*, Class. Quant. Grav., 2021.
- [224] A. Einstein, *Kosmologische Betrachtungen zur allgemeinen Relativitätstheorie*, Sitz. Preuss. Akad. Wiss., 1917.
- [225] M. S. El Naschie, *A Review of E Infinity Theory*, Chaos Solitons Fractals, 2004.
- [226] Fermilab, *Muon g-2 Results*, 2023.
- [227] P. Di Francesco et al., *Conformal Field Theory*, Springer, 1997.
- [228] S. Hossenfelder, *Lost in Math*, Basic Books, 2025.
- [229] S. Hossenfelder, *Single Clock Video Analysis*, YouTube, 2025.
- [230] F. Hoyle, *A New Model for the Expanding Universe*, MNRAS, 1948.
- [231] H. Dingle, *Philosophy of Physics*, Dover, 1931.
- [232] T. Jacobson, *Thermodynamics of Spacetime*, Phys. Rev. Lett., 1995.
- [233] JWST Collaboration, *Early Release Observations*, NASA, 2022.
- [234] M. Kasevich, *Atom Interferometry*, Ann. Rev. Nucl. Part. Sci., 2023.
- [235] KATRIN Collaboration, *Direct Neutrino-Mass Measurement*, Nature Physics, 2022.
- [236] E. Lerner, *The Big Bang Never Happened*, Vintage, 2014.
- [237] LISA Consortium, *Laser Interferometer Space Antenna*, ESA, 2017.
- [238] A. Lopez et al., *Asymmetry of the CMB*, Phys. Rev. D, 2010.
- [239] A. D. Ludlow et al., *Optical Atomic Clocks*, Rev. Mod. Phys., 2015.
- [240] E. Mach, *Die Mechanik in ihrer Entwicklung*, Leipzig, 1883.
- [241] J. Maldacena, *The Large N Limit of Superconformal Field Theories*, Adv. Theor. Math. Phys., 1998.
- [242] H. Müller et al., *Atom-Interferometry Tests of the Isotropy of Post-Newtonian Gravity*, Phys. Rev. Lett., 2014.
- [243] Muon g-2 Collaboration, *Final Results*, Phys. Rev. Lett., 2025.
- [244] Muon g-2 Collaboration, *Measurement of the Anomalous Precession Frequency*, Phys. Rev. Lett., 2023.
- [245] D. B. Newell et al., *The CODATA 2017 Values*, Metrologia, 2018.
- [246] L. Nottale, *Fractal Space-Time and Microphysics*, World Scientific, 1993.

- [247] J. Pascher, *CMB Analysis in T0 Framework*, 2025.
- [248] J. Pascher, *Muon g-2 in T0 Theory*, 2025.
- [249] J. Pascher, *Quantum Mechanics in T0 Framework*, 2025.
- [250] J. Pascher, *SI Units Derivation in T0*, 2025.
- [251] J. Pascher, *T0 Theory Overview*, 2025.
- [252] J. Pascher, *Fundamentals of T0 Theory*, 2025.
- [253] J. Pascher, *Muon g-2 Revision 9*, 2025.
- [254] J. Pascher, *Geometric Formalism in T0*, 2025.
- [255] J. Pascher, *T0 Foundations*, 2025.
- [256] J. Pascher, *Beta Parameter Derivation*, 2025.
- [257] J. Pascher, *CMB in T0 (English)*, 2025.
- [258] J. Pascher, *Cosmology in T0 (English)*, 2025.
- [259] J. Pascher, *Derivation of Beta*, 2025.
- [260] J. Pascher, *Gravitation in T0 (English)*, 2025.
- [261] J. Pascher, *Higgs Connection in T0*, 2025.
- [262] J. Pascher, *Lagrangian Formulation in T0*, 2025.
- [263] J. Pascher, *Lagrangian in T0 (English)*, 2025.
- [264] J. Pascher, *Muon g-2 Analysis in T0*, 2025.
- [265] J. Pascher, *Pragmatic T0 Framework*, 2025.
- [266] J. Pascher, *Energy in T0 Framework*, 2025.
- [267] J. Pascher, *T0 Theory Complete*, 2025.
- [268] Particle Data Group, *Review of Particle Physics*, Phys. Rev. D, 2024.
- [269] R. Penrose, *The Apparent Shape of a Relativistically Moving Sphere*, Proc. Camb. Phil. Soc., 1959.
- [270] R. Penrose, *Twistor Algebra*, J. Math. Phys., 1967.
- [271] R. Penrose, *The Road to Reality*, Knopf, 2004.
- [272] A. L. Peratt, *Physics of the Plasma Universe*, Springer, 1992.
- [273] M. E. Peskin, D. V. Schroeder, *An Introduction to Quantum Field Theory*, Westview, 1995.
- [274] Planck Collaboration, *Planck 2018 Results*, A&A, 2020.

- [275] J. Polchinski, *String Theory*, Cambridge, 1998.
- [276] A. G. Riess et al., *Large Magellanic Cloud Cepheid Standards*, ApJ, 2019.
- [277] A. G. Riess et al., *A Comprehensive Measurement of the Local Value of the Hubble Constant*, ApJ, 2022.
- [278] C. Rovelli, *Quantum Gravity*, Cambridge, 2004.
- [279] D. W. Sciama, *On the Origin of Inertia*, MNRAS, 1953.
- [280] Science Daily, *Physics News*, 2025.
- [281] Standard Model g-2 Theory Initiative, *Updated SM Prediction*, 2025.
- [282] L. Susskind, *The World as a Hologram*, J. Math. Phys., 1995.
- [283] J. Pascher, *T0 Cosmology*, 2025.
- [284] J. Terrell, *Invisibility of the Lorentz Contraction*, Phys. Rev., 1959.
- [285] J. Terrell, *Single Clock Framework*, 2025.
- [286] T. Thiemann, *Modern Canonical Quantum General Relativity*, Cambridge, 2007.
- [287] B. C. van Fraassen, *The Scientific Image*, Oxford, 1980.
- [288] E. Verlinde, *On the Origin of Gravity and the Laws of Newton*, JHEP, 2011.
- [289] J. Pascher, *T0 Theory Video Presentation*, 2025.
- [290] S. Weinberg, *The Cosmological Constant Problem*, Rev. Mod. Phys., 1989.
- [291] D. Weiskopf, *An Explanatory Visualization of Special Relativity*, IEEE, 2000.
- [292] J. A. Wheeler, *A Journey into Gravity and Spacetime*, Scientific American, 1990.
- [293] Wikipedia, *Bell's Theorem*, 2024.
- [294] F. Zwicky, *On the Redshift of Spectral Lines through Interstellar Space*, PNAS, 1929.