

## Philip David Mannheim – Research Articles

1. P. D. Mannheim, *Influence of force-constant changes on the lattice dynamics of cubic crystals with point defects*, Physical Review **165**, 1011 (1968).
2. P. D. Mannheim and A. Simopoulos, *Influence of force-constant changes and localized modes on the  $V : Fe^{57}$  Mössbauer system*, Physical Review **165**, 845 (1968).
3. E. Gotsman, P. D. Mannheim and U. Maor, *Photoproduction of vector mesons in a Regge-pole model*, Physical Review **186**, 1703 (1969).
4. P. D. Mannheim and H. Friedmann, *Theory of optical absorption by diatomic molecules embedded in rare gas crystals*, Physica Status Solidi **39**, 409 (1970).
5. P. D. Mannheim and U. Maor,  *$\rho$ -meson mass shift in photoproduction processes*, Physical Review D **2**, 2105 (1970).
6. P. D. Mannheim, *Spin independent pomeron in  $\pi N$  scattering*, Lettere Nuovo Cimento **3**, 781 (1970).
7. P. D. Mannheim and S. Nussinov, *Current conservation, VDM and decay processes*, Nuovo Cimento A **1**, 619 (1971).
8. P. D. Mannheim, *Is there a vector-dominance frame problem?*, Physical Review D **3**, 2840 (1971).
9. P. D. Mannheim, *VDM, PCAC and the decoupling of  $\pi\rho\omega$* , Physical Review D **4**, 2936 (1971).
10. P. D. Mannheim and S. S. Cohen, *Force-constant changes in the crystal impurity problem*, Physical Review B **4**, 3748 (1971).
11. P. D. Mannheim, *Localized modes and cell-model limit in the crystal impurity problem*, Physical Review B **5**, 745 (1972).
12. P. D. Mannheim, *On the validity of the use of the cell-model in impurity-matrix absorption spectra calculations*, Journal of Chemical Physics **56**, 1006 (1972).
13. J. A. C. Loodts, P. D. Mannheim and R. Brout,  *$\eta \rightarrow 3\pi$  and electromagnetic tadpoles*, Nuclear Physics B **40**, 375 (1972).
14. P. D. Mannheim, *Is  $\eta \rightarrow 3\pi$  a short-distance problem?*, Physical Review D **9**, 3438 (1974).
15. P. D. Mannheim, *An infrared bootstrap for the electron mass in finite quantum electrodynamics*, Physical Review D **10**, 3311 (1974).
16. P. D. Mannheim, *Structure of the vertex function in finite quantum electrodynamics*, Physical Review D **11**, 3472 (1975).
17. P. D. Mannheim, *Dynamical symmetry breaking as a bootstrap*, Physical Review D **12**, 1772 (1975).
18. P. D. Mannheim, *Dynamical generation of extended structures in field theory*, Physical Review D **14**, 2072 (1976).
19. P. D. Mannheim, *Dynamical basis for the Poincare stresses*, Nuclear Physics B **143**, 285 (1978).

20. N. G. Deshpande, R. C. Hwa and P. D. Mannheim, *Nonconservation of muon number in a broken  $SU(4) \times U(1)$  gauge theory*, Physical Review Letters **39**, 256 (1977).
21. N. G. Deshpande, R. C. Hwa and P. D. Mannheim,  *$SU(4) \times U(1)$  gauge theory: I. Muon number nonconservation*, Physical Review D **19**, 2686 (1979).
22. N. G. Deshpande, R. C. Hwa and P. D. Mannheim,  *$SU(4) \times U(1)$  gauge theory: II. CP nonconservation*, Physical Review D **19**, 2703 (1979).
23. N. G. Deshpande, R. C. Hwa and P. D. Mannheim,  *$SU(4) \times U(1)$  gauge theory: III. New approach to Cabibbo mixing*, Physical Review D **19**, 2708 (1979).
24. P. D. Mannheim, *Parity violation and the masslessness of the neutrino*, Physics Letters B **85**, 253 (1979).
25. P. D. Mannheim, *Neutrino pairing as the origin of parity violation in a chiral flavor theory of weak interactions*, Physical Review D **22**, 1729 (1980).
26. N. G. Deshpande and P. D. Mannheim, *Grandunified model with a stable proton and no axion problem*, Physics Letters B **94**, 355 (1980).
27. N. G. Deshpande and P. D. Mannheim, *Grandunification and proton stability based on a chiral  $SU(8)$  theory*, Physical Review D **24**, 2923 (1981).
28. A. Davidson, K. C. Wali and P. D. Mannheim, *Multigenerational flavor-color-hyper-color unification*, Physical Review Letters **45**, 1135 (1980).
29. A. Davidson, P. D. Mannheim and K. C. Wali, *Extended hypercolor and the Cabibbo angle*, Physical Review Letters **47**, 149 (1981), E47, 620 (1981).
30. A. Davidson, P. D. Mannheim and K. C. Wali, *Hypercolor, extended hypercolor and the generation problem*, Physical Review D **26**, 1133 (1982).
31. P. D. Mannheim, *The physics behind path integrals in quantum mechanics*, American Journal of Physics **51**, 328 (1983).
32. P. D. Mannheim, *Effective low energy custodial symmetry and Weinberg mixing*, Physics Letters B **125**, 282 (1983).
33. P. D. Mannheim, *Quantization of classical Grassmann spin*, Physics Letters B **137**, 385 (1984).
34. P. D. Mannheim, *Introduction to Majorana masses*, International Journal of Theoretical Physics **23**, 643 (1984).
35. P. D. Mannheim, *Spontaneously broken local Pauli-Gursey invariance and constraints on proton decay*, Physical Review D **29**, 1520 (1984).
36. P. D. Mannheim, *Classical spin and its quantization*, Physical Review D **32**, 898 (1985).
37. P. D. Mannheim, *Approximate Weinberg mixing*, International Journal of Theoretical Physics **24**, 505 (1985).
38. P. D. Mannheim, *Klein-Gordon propagator via first quantization*, Physics Letters B **166**, 191 (1986).
39. P. D. Mannheim, *Non-local quantum numbers in field theory*, Nuovo Cimento A **93**, 185 (1986).

40. P. D. Mannheim and D. Kazanas, *Energy-momentum tensor of fields in the standard cosmology*, *General Relativity and Gravitation* **20**, 201 (1988).
41. Y. Deng and P. D. Mannheim, *Black-body radiation in a curved Robertson-Walker background*, *Astrophysics and Space Science* **135**, 261 (1987).
42. Y. Deng and P. D. Mannheim, *Self-consistent solution for a scalar field coupled conformally to a Robertson-Walker geometry*, *Astrophysical Journal* **324**, 1 (1988).
43. Y. Deng and P. D. Mannheim, *Perfect Maxwell fluids in the standard cosmology*, *General Relativity and Gravitation* **20**, 969 (1988).
44. P. D. Mannheim, *Derivation of the formalism for neutrino matter oscillations from the neutrino relativistic field equations*, *Physical Review D* **37**, 1935 (1988).
45. P. D. Mannheim, *Conformal cosmology with no cosmological constant*, *General Relativity and Gravitation* **22**, 289 (1990).
46. P. D. Mannheim and D. Kazanas, *Exact vacuum solution to conformal Weyl gravity and galactic rotation curves*, *Astrophysical Journal* **342**, 635 (1989).
47. Y. Deng and P. D. Mannheim, *Shear-free spherically symmetric inhomogeneous cosmological model with heat flow and bulk viscosity*, *Physical Review D* **42**, 371 (1990).
48. D. Kazanas and P. D. Mannheim, *General structure of the gravitational equations of motion in conformal Weyl gravity*, *Astrophysical Journal Supplement Series* **76**, 431 (1991).
49. P. D. Mannheim and D. Kazanas, *Probing the Higgs vacuum with general relativity*, *Astrophysics and Space Science* **185**, 167 (1991).
50. P. D. Mannheim, *General relativity and fifth force experiments*, *Astrophysics and Space Science* **181**, 55 (1991).
51. P. D. Mannheim, *Potential signal for black hole formation*, *Astrophysics and Space Science (Letter)* **176**, 323 (1991).
52. Y. Deng and P. D. Mannheim, *Acceleration-free spherically symmetric inhomogeneous cosmological model with shear viscosity*, *Physical Review D* **44**, 1722 (1991).
53. P. D. Mannheim and D. Kazanas, *Solutions to the Reissner-Nordstrom, Kerr and Kerr-Newman problems in fourth order conformal Weyl gravity*, *Physical Review D* **44**, 417 (1991).
54. P. D. Mannheim, *Conformal gravity and the flatness problem*, *Astrophysical Journal* **391**, 429 (1992).
55. P. D. Mannheim, *Dynamical mass and geodesic motion*, *General Relativity and Gravitation* **25**, 697 (1993).
56. P. D. Mannheim, *Linear potentials and galactic rotation curves*, *Astrophysical Journal* **419**, 150 (1993). (hep-ph/9212304)
57. P. D. Mannheim and D. Kazanas, *Newtonian limit of conformal gravity and the lack of necessity of the second order Poisson equation*, *General Relativity and Gravitation* **26**, 337 (1994).
58. P. D. Mannheim, *Open questions in classical gravity*, *Foundations of Physics* **24**, 487 (1994). (gr-qc/9306025)

59. P. D. Mannheim, *Linear potentials in galaxies and clusters of galaxies*, April 1995. (astro-ph/9504022)
60. P. D. Mannheim, *Cosmology and galactic rotation curves*, November 1995. (astro-ph/9511045)
61. P. D. Mannheim, *Conformal cosmology and the age of the universe*, January 1996. (astro-ph/9601071)
62. P. D. Mannheim and J. Kmetko, *Linear potentials and galactic rotation curves - detailed fitting*, February 1996. (astro-ph/9602094)
63. P. D. Mannheim, *Are galactic rotation curves really flat?*, *Astrophysical Journal* **479**, 659 (1997). (astro-ph/9605085)
64. P. D. Mannheim, *Classical underpinnings of gravitationally induced quantum interference*, *Physical Review A* **57**, 1260 (1998). (gr-qc/9611037)
65. P. D. Mannheim, *Local and global gravity*, *Foundations of Physics* **26**, 1683 (1996). (gr-qc/9611038)
66. P. D. Mannheim, *Curvature and cosmic repulsion*, March 1998. (astro-ph/9803135)
67. P. D. Mannheim, *Implications of cosmic repulsion for gravitational theory*, *Physical Review D* **58**, 103511 (1998). (astro-ph/9804335)
68. P. D. Mannheim, *Cosmic acceleration as the solution to the cosmological constant problem*, *Astrophysical Journal* **561**, 1 (2001). (astro-ph/9910093)
69. P. D. Mannheim, *Attractive and repulsive gravity*, *Foundations of Physics* **30**, 709 (2000). (gr-qc/0001011)
70. P. D. Mannheim and A. Davidson, *Fourth order theories without ghosts*, January 2000. (hep-th/0001115)
71. P. D. Mannheim, *Constraints on brane-localized gravity*, *Physical Review D* **63**, 024018 (2001). (hep-th/0005226)
72. P. D. Mannheim, *Constraints on 5D anti-de Sitter embeddings*, *Physical Review D* **64**, 065008 (2001). (hep-th/0009065)
73. A. Davidson and P. D. Mannheim, *Dynamical localization of gravity*, September 2000. (hep-th/0009064)
74. P. D. Mannheim, *Delta function singularities in the Weyl tensor at the brane*, *Physical Review D* **64**, 068501 (2001). (hep-th/0101047)
75. P. D. Mannheim, *How recent is cosmic acceleration?*, *International Journal of Modern Physics D* **12**, 893 (2003). (astro-ph/0104022)
76. M. Y. Hu, W. Sturhahn, T. S. Toellner, P. D. Mannheim, D. E. Brown, J. Zhao, and E. E. Alp, *Measuring velocity of sound with nuclear resonant inelastic x-ray scattering*, *Physical Review B* **67**, 094304 (2003). (cond-mat/0212387)
77. P. D. Mannheim and A. Davidson, *Dirac quantization of the Pais-Uhlenbeck fourth order oscillator*, *Physical Review A* **71**, 042110 (2005). (hep-th/0408104)
78. P. D. Mannheim, *Alternatives to dark matter and dark energy*, *Progress in Particle and Nuclear Physics* **56**, 340 (2006). (astro-ph/0505266)

79. H. J. Lipkin and P. D. Mannheim, *Bounds on localized modes in the crystal impurity problem*, Physical Review B **73**, 174105 (2006). (cond-mat/0510542)
80. P. D. Mannheim, *Arbitrary force-constant changes in the crystal impurity problem*, Physical Review B **73**, 184103 (2006). (cond-mat/0512188)
81. P. D. Mannheim, *Gauge invariant treatment of the energy carried by a gravitational wave*, Physical Review D **74**, 024019 (2006). (gr-qc/0601032)
82. P. D. Mannheim and I. Simbotin, *Completeness of non-normalizable modes*, Journal of Physics A **39**, 13783 (2006). (hep-th/0607090)
83. P. D. Mannheim, *Solution to the ghost problem in fourth order derivative theories*, Foundations of Physics **37**, 532 (2007). (hep-th/0608154)
84. P. D. Mannheim, *Schwarzschild limit of conformal gravity in the presence of macroscopic scalar fields*, Physical Review D **75**, 124006 (2007). (gr-qc/0703037)
85. C. M. Bender and P. D. Mannheim, *No-ghost theorem for the fourth-order derivative Pais-Uhlenbeck oscillator model*, Physical Review Letters **100**, 110402 (2008). (arXiv:0706.0207 [hep-th])
86. C. M. Bender and P. D. Mannheim, *Giving up the ghost*, Journal of Physics A **41**, 304018 (2008). (arXiv:0807.2607 [hep-th])
87. C. M. Bender and P. D. Mannheim, *Exactly solvable PT-symmetric Hamiltonian having no Hermitian counterpart*, Physical Review D **78**, 025022 (2008). (arXiv:0804.4190 [hep-th])
88. C. M. Bender and P. D. Mannheim, *PT symmetry and necessary and sufficient conditions for the reality of energy eigenvalues*, Physics Letters A **374**, 1616 (2010). (arXiv:0902.1365 [hep-th])
89. P. D. Mannheim, J. G. O'Brien and D. E. Cox, *Limitations of the standard gravitational perfect fluid paradigm*, General Relativity and Gravitation **42**, 2561 (2010). (arXiv:0903.4381 [gr-qc])
90. P. D. Mannheim, *Comprehensive Solution to the cosmological constant, zero-point energy, and quantum gravity problems*, General Relativity and Gravitation **43**, 703 (2011). (arXiv:0909.0212 [hep-th])
91. P. D. Mannheim, *PT symmetry as a necessary and sufficient condition for unitary time evolution*, Philosophical Transactions of the Royal Society A **371**, 20120060 (2013). (arXiv:0912.2635[hep-th])
92. P. D. Mannheim, *Intrinsically quantum-mechanical gravity and the cosmological constant problem*, Modern Physics Letters A **26**, 2375 (2011). (arXiv:1005.5108 [hep-th])
93. P. D. Mannheim and J. G. O'Brien, *Impact of a global quadratic potential on galactic rotation curves*, Physical Review Letters **106**, 121101(2011). (arXiv: 1007.0970 [astro-ph.CO])
94. P. D. Mannheim and J. G. O'Brien, *Fitting galactic rotation curves with conformal gravity and a global quadratic potential*, Physical Review D **85**, 124020 (2012). (arXiv: 1011.3495 [astro-ph.CO])
95. P. D. Mannheim, *Making the case for conformal gravity*, Foundations of Physics **42**, 388 (2012). (arXiv: 1101.2186 [hep-th])

96. C. M. Bender and P. D. Mannheim, *PT symmetry in relativistic quantum mechanics*, Physical Review D **84**, 105038 (2011); **84**, 129902(E) (2011). (arXiv:1107.0501 [hep-th])
97. J. G. O'Brien and P. D. Mannheim, *Fitting dwarf galaxy rotation curves with conformal gravity*. Monthly Notices of the Royal Astronomical Society **421**, 1273 (2012). (arXiv:1107.5229 [astro-ph.CO])
98. P. D. Mannheim, *Cosmological perturbations in conformal gravity*, Physical Review D **85**, 124008 (2012). (arXiv:1109.4119 [gr-qc])
99. P. D. Mannheim, *Astrophysical evidence for the non-Hermitian but PT-symmetric Hamiltonian of conformal gravity*, Fortschritte der Physik **61**, 140 (2013). (arXiv: 1205.5717 [hep-th])
100. P. D. Mannheim and J. G. O'Brien, *Galactic rotation curves in conformal gravity*, Journal of Physics: Conference Series **437**, 012002 (2013). (arXiv:1211.0188 [astro-ph.CO])
101. L. Fabbri and P. D. Mannheim, *Continuity of the torsionless limit as a selection rule for gravity theories with torsion*, Physical Review D **90**, 024042 (2014). (arXiv:1405.1248 [gr-qc])
102. P. D. Mannheim and J. J. Poveromo, *Gravitational analog of Faraday's law via torsion and a metric with an antisymmetric part*, General Relativity and Gravitation **46**, 1795 (2014). (arXiv:1406.1470 [gr-qc])
103. P. D. Mannheim, *Torsion, magnetic monopoles and Faraday's law via a variational principle*, Journal of Physics: Conference Series **615**, 012004 (2015). (arXiv:1406.2265 [hep-th])
104. P. D. Mannheim, *PT symmetry, conformal symmetry, and the metrication of electromagnetism*, Foundations of Physics **47**, 1229 (2017). (arXiv:1407.1820 [hep-th])
105. P. D. Mannheim, *Living without supersymmetry – the conformal alternative and a dynamical Higgs boson*, Journal of Physics G **44**, 115003 (2017). (arXiv:1506.01399 [hep-ph]).
106. P. D. Mannheim, *Comment on "Problems with Mannheim's conformal gravity program"*, Physical Review D **93**, 068501 (2016). (arXiv:1506.02479 [gr-qc])
107. P. D. Mannheim, *Colloquium on the 2013 Nobel Prize in Physics awarded to Francois Englert and Peter Higgs*, arXiv:1506.04120 [physics.pop-ph], June 2015.
108. P. D. Mannheim, *Advancing the case for PT symmetry – the Hamiltonian is always PT symmetric*, arXiv:1506.08432 [quant-ph], June 2015.
109. P. D. Mannheim, *Extension of the CPT Theorem to non-Hermitian Hamiltonians and unstable states*, Physics Letters B **753**, 288 (2016). (arXiv:1512.03736 [quant-ph])
110. P. D. Mannheim, *Antilinearity rather than Hermiticity as a guiding principle for quantum theory*, Journal of Physics A **51**, 315302 (2018). (arXiv:1512.04915 [hep-th])
111. P. D. Mannheim, *Conformal invariance and the metrication of the fundamental forces*, International Journal of Modern Physics D **25**, 1644003 (2016). (arXiv:1603.08405 [gr-qc])
112. P. D. Mannheim, *Critical scaling and a dynamical Higgs boson*, Journal of Physics: Conference Series **1239**, 012017 (2019). (arXiv:1604.07696 [hep-ph])

113. P. D. Mannheim, *Mass generation, the cosmological constant problem, conformal symmetry, and the Higgs boson*, Progress in Particle and Nuclear Physics **94**, 125 (2017). (arXiv:1610.08907 [hep-ph])
114. P. D. Mannheim, *Anomalous dimensions and the renormalizability of the four-Fermion interaction*, Physics Letters B **773**, 604 (2017). (arXiv:1611.09129 [hep-th])
115. P. D. Mannheim, *Is the cosmological constant problem properly posed?*, International Journal of Modern Physics D **26**, 1743009 (2017). (arXiv:1703.09286 [hep-th])
116. J. G. O'Brien, T. L. Chiarelli and P. D. Mannheim, *Universal properties of galactic rotation curves and a first principles derivation of the Tully-Fisher relation*, Physics Letters B **782**, 433 (2018). (arXiv:1704.03921 [astro-ph.GA])
117. P. D. Mannheim, *Appropriate inner product for PT-Symmetric Hamiltonians*, Physical Review D **97**, 045001 (2018). (arXiv:1708.01247 [quant-ph])
118. P. D. Mannheim, *Unitarity of loop diagrams for the ghostlike  $1/(k^2 - M_1^2) - 1/(k^2 - M_2^2)$  propagator*, Physical Review D **98**, 045014 (2018). (arXiv:1801.03220 [hep-th])
119. A. Amarasinghe, M. G. Phelps and P. D. Mannheim, *Cosmological perturbations in conformal gravity. II.*, Physical Review D **99**, 083527 (2019). (arXiv:1805.06807 [gr-qc])
120. P. D. Mannheim, *Goldstone bosons and the Englert-Brout-Higgs mechanism in non-Hermitian theories*, Physical Review D **99**, 045006 (2019). (arXiv:1808.00437 [hep-th])
121. J. G. O'Brien, T. L. Chiarelli, P. D. Mannheim, M. A. Falcone, M. H. AlQurashi and J. Carter, *Radial acceleration and Tully-Fisher relations in conformal gravity*, Journal of Physics: Conference Series **1239**, 012009 (2019). (arXiv:1812.03152 [astro-ph.GA])
122. P. D. Mannheim, *Is dark matter fact or fantasy? – clues from the data*, International Journal of Modern Physics D **28**, 1944022 (2019). (arXiv:1903.11217 [astro-ph.GA])
123. P. D. Mannheim, P. Lowdon and S. J. Brodsky, *Structure of light front vacuum sector diagrams*, Physics Letters B **797**, 134916 (2019). (arXiv:1904.05253 [hep-ph])
124. P. D. Mannheim, *Equivalence of light-front quantization and instant-time quantization*, Physical Review D **102**, 025020 (2020). (arXiv:1909.03548 [hep-ph])
125. M. Phelps, A. Amarasinghe and P. D. Mannheim, *Three-dimensional and four-dimensional scalar, vector, tensor cosmological fluctuations and the cosmological decomposition theorem*, General Relativity and Gravitation **52**, 114 (2020). (arXiv:1912.10448 [gr-qc])
126. P. D. Mannheim, *Light-front quantization is the same as instant-time quantization*, Proceedings of Science (LC2019)062 (2019). (arXiv:2001.04603 [hep-th])
127. P. D. Mannheim, *Ghost problems from Pauli-Villars to fourth-order quantum gravity and their resolution*, International Journal of Modern Physics D **29**, 2043009 (2020). (arXiv:2004.00376 [hep-th])
128. P. D. Mannheim, P. Lowdon and S. J. Brodsky, *Comparing light-front quantization with instant-time quantization*, Physics Reports **891**, 1 (2021). (arXiv:2005.00109 [hep-ph])
129. P. D. Mannheim, *Exact solution to perturbative conformal cosmology in the recombination era*, Physical Review D **102**, 123535 (2020). (arXiv:2009.06841 [gr-qc])

130. A. Amarasinghe and P. D. Mannheim, *Cosmological fluctuations on the light cone*, Physical Review D **103**, 103517 (2021). (arXiv:2011.02440 [gr-qc])
131. A. Amarasinghe, T. Liu, D. A. Norman and P. D. Mannheim, *Exact solution to perturbative conformal cosmology from recombination until the current era*, Physical Review D **103**, 104022 (2021). (arXiv:2101.02608 [gr-qc])
132. P. D. Mannheim and J. W. Moffat, *External field effect in gravity*, International Journal of Modern Physics D **30**, 2142009 (2021). (arXiv: 2103.13972 [gr-qc])
133. P. D. Mannheim, *Antilinear symmetry and the ghost problem in quantum field theory*, Proceedings of Virtual Seminar Series on Pseudo-Hermitian Hamiltonians in Quantum Physics, Journal of Physics Conference Series **2038**, 012018 (2021). (arXiv: 2104.03708 [hep-th])
134. P. D. Mannheim, *Critique of the use of geodesics in astrophysics and cosmology*, arXiv:2105.08556 [gr-qc]
135. P. D. Mannheim, *Structure of conformal gravity in the presence of a scale breaking scalar field*, arXiv:2105.14679 [gr-qc]
136. P. D. Mannheim, *Extension of the Goldstone and the Englert-Brout-Higgs mechanisms to non-Hermitian theories*, arXiv:2109.08714 [hep-th]
137. P. D. Mannheim, *Solution to the ghost problem in higher-derivative gravity*, Proceedings of the Workshop on Quantum Gravity, Higher Derivatives and Nonlocality, Il Nuovo Cimento C, in press. (arXiv:2109.12743 [hep-th])

#### Philip David Mannheim – Conference Proceedings

1. A. Davidson, P. D. Mannheim and K. C. Wali, *Flavor-color-hypercolor unification based on  $SO(10)_V \times SO(10)_H$* , in Gauge theories, massive neutrinos, and proton decay, Proceedings of Orbis Scientiae, University of Miami, January 1981. Studies in the natural sciences Vol. **18**, edited by B. Kursunoglu and A. Perlmutter, Plenum Press, N. Y. (1981).
2. P. D. Mannheim, *Phonons: interactions with electromagnetic waves*, in Encyclopedia of Materials Science and Engineering, edited by M. Bever, Pergamon Press, N. Y. (1986).
3. P. D. Mannheim, *Symmetry and spontaneously broken symmetry in the physics of elementary particles*, Computers and Mathematics with Applications **12B**, 169 (1986). Republished in Symmetry: unifying human understanding, International series in modern applied mathematics and computer science Vol. 10, edited by I. Hargittai, Pergamon Press, N. Y. (1986).
4. P. D. Mannheim and D. Kazanas, *Exact vacuum solution to fourth order Weyl gravity*, in Proceedings of the Storrs meeting, the fourth meeting (new series) of the Division of Particles and Fields of the American Physical Society, University of Connecticut, August 1988. Edited by K. Haller, D. C. Caldi, M. M. Islam, R. L. Mallett, P. D. Mannheim, and M. S. Swanson, World Scientific Press, Singapore (1989).
5. K. Haller, D. C. Caldi, M. M. Islam, R. L. Mallett, P. D. Mannheim and M. S. Swanson, joint editors, *Proceedings of the Storrs meeting*, the fourth meeting (new series) of the Division of Particles and Fields of the American Physical Society, University of Connecticut, August 1988. Published by World Scientific Press, Singapore (1989).



6. P. D. Mannheim, *Some exact solutions to conformal Weyl gravity*, in Nonlinear Problems in Relativity and Cosmology, Proceedings of the Sixth Florida Workshop on Nonlinear Astronomy, University of Florida, October 1990. Edited by J. R. Buchler, S. L. Detweiler, and J. R. Ipser, Annals of the New York Academy of Sciences, Vol. **631**, 194 (1991).
7. P. D. Mannheim and D. Kazanas, *Current status of conformal Weyl gravity*, in Proceedings of the “After the First Three Minutes” Workshop, University of Maryland, October 1990. A. I. P. Conference Proceedings No. **222**, edited by S. S. Holt, C. L. Bennett, and V. Trimble, A. I. P., N. Y. (1991).
8. D. Kazanas and P. D. Mannheim, *Dark matter or new physics?*, in Proceedings of “After the First Three Minutes”, University of Maryland, October 1990. A. I. P. Conference Proceedings No. **222**, edited by S. S. Holt, C. L. Bennett, and V. Trimble, A. I. P., N. Y. (1991).
9. P. D. Mannheim, *Conformal gravity, cosmology and Newton’s law*, in Proceedings of the XXth International Conference on Differential Geometric Methods in Theoretical Physics, Baruch College/CUNY, New York, June 1991. Edited by S. Catto and A. Rocha, World Scientific Press, Singapore (1992).
10. P. D. Mannheim, *Four dimensional conformal gravity, confinement, and galactic rotation curves*, in Proceedings of “PASCOS 94”, the Fourth International Symposium on Particles, Strings and Cosmology, Syracuse, New York, May 1994. Edited by K. C. Wali, World Scientific Press, Singapore (1995). (gr-qc/9407010)
11. P. D. Mannheim and D. Kazanas, *Higgs mechanism and the structure of the energy-momentum tensor in Einstein gravity and conformal gravity*, in Proceedings of the Seventh Marcel Grossmann Meeting on General Relativity, Stanford, California, July 1994. Edited by R. T. Jantzen, G. M. Keiser and R. Ruffini, World Scientific Press, Singapore (1996). (gr-qc/9409050)
12. P. D. Mannheim, *Microlensing, Newton-Einstein gravity, and conformal gravity*, in Proceedings of “Dark Matter”, University of Maryland, October 1994. A. I. P. Conference Proceedings No. **336**, edited by S. S. Holt and C. L. Bennett, A. I. P., N. Y. (1995). (astro-ph/9412007)
13. P. D. Mannheim, *Linear potentials in the cores of clusters of galaxies*, in Proceedings of “Clusters, Lensing, and the Future of the Universe”, University of Maryland, June 1995. Astronomical Society of the Pacific Conference Series, Vol. **88**, edited by V. Trimble and A. Reisenegger, A. S. P., San Francisco (1996). (astro-ph/9508045)
14. P. D. Mannheim, *Dark matter: a challenge to standard gravity or a warning?*, in Proceedings of “Eighteenth Texas Symposium on Relativistic Astrophysics”, University of Chicago, December 1996. Edited by A. V. Olinto, J. A. Frieman, and D. N. Schramm, World Scientific Press, Singapore (1998). (astro-ph/9701128)
15. P. D. Mannheim, *Imprint of the global Hubble flow on galactic rotation curves*, in Proceedings of “Galactic Halos: A UC Santa Cruz Workshop”, University of California at Santa Cruz, August 1997. Astronomical Society of the Pacific Conference Series, Vol. **136**, edited by D. Zaritsky, A. S. P., San Francisco (1998). (astro-ph/9712090)
16. P. D. Mannheim, *How we got into the dark matter fix and how we can get out*, in Proceedings of “PASCOS 98”, the Sixth International Symposium on Particles, Strings and Cosmology, Northeastern University, Boston, March 1998. Edited by P. Nath, World Scientific Press, Singapore (1999). (astro-ph/9807122)
17. P. D. Mannheim, *The equivalence principle in classical mechanics and quantum mechanics*, in “Contemporary Fundamental Problems”. Edited by Valeri Dvoeglazov, Nova Science Publishers, New York (1999). (gr-qc/9810087)
18. P. D. Mannheim, *Curvature, galactic dynamics and cosmic repulsion*, in Proceedings of the International Conference on Galaxy Dynamics, Rutgers University, August 1998. Astronomical Society of the Pacific Conference Series, Vol. **182**, edited by D. Merritt, J. A. Sellwood and M. Valluri, A. S. P., San Francisco (1999). (astro-ph/9811256)

19. G. V. Dunne, L. P. Horwitz, M. M. Islam, and P. D. Mannheim, joint guest editors of 3 special monthly festschrift sections of Foundations of Physics in honor of the Seventieth Birthday of Kurt Haller, Foundations of Physics, **30**, Nos 3, 4, 5 (2000).
20. P. D. Mannheim, *Conformal gravity and a naturally small cosmological constant*, Proceedings of "20th Texas Symposium on Relativistic Astrophysics", Austin, December 2000, J. C. Wheeler and H. Martel (Eds.), American Institute of Physics, NY (2001). (astro-ph/9901219)
21. P. D. Mannheim, *Cosmic acceleration and a natural solution to the cosmological constant problem*, Proceedings of "The Role of Neutrinos, Strings, Gravity and Variable Cosmological Constant in Elementary Particle Physics", Coral Gables Conference, December 2000, B. N. Kursunoglu, S. L. Mintz and A. Perlmutter (Eds.), Kluwer Academic/Plenum Publishers, NY (2001). (gr-qc/9903005)
22. P. D. Mannheim, *Is cosmic acceleration really recent?*, Proceedings of "Cosmology and Elementary Particle Physics", Coral Gables Conference, December 2001, B. N. Kursunoglu, S. L. Mintz and A. Perlmutter (Eds.), American Institute of Physics, NY (2002). (astro-ph/0204202)
23. P. D. Mannheim, *Localization issues for Robertson-Walker branes*, Proceedings of "Cosmology and Elementary Particle Physics", Coral Gables Conference, December 2001, B. N. Kursunoglu, S. L. Mintz and A. Perlmutter (Eds.), American Institute of Physics, NY (2002). (arXiv:0807.3685 [hep-th])
24. P. D. Mannheim, *Options for cosmology at redshifts above one*, Proceedings of "Short Distance Behavior of Fundamental Interactions", Coral Gables Conference, December 2002, B. N. Kursunoglu, M. Camcigil, S. L. Mintz and A. Perlmutter (Eds.), American Institute of Physics, NY (2003). (astro-ph/0302362)
25. P. D. Mannheim, *The work of Behram Kursunoglu*, Proceedings of "The Launching of La Belle Epoque of High Energy Physics and Cosmology", Coral Gables Conference, December 2003, T. Curtright, S. Mintz and A. Perlmutter (Eds.), World Scientific Publishing Company, Singapore (2004). (gr-qc/0405035)
26. P. D. Mannheim, *Dark matter and dark energy – fact or fantasy*, Montreal-Rochester-Syracuse-Toronto Conference, Montreal, Canada, May 2004. International Journal of Modern Physics **A19**, 5333 (2004).
27. P. D. Mannheim, *Causality in the brane world*, Presentation at the 26th International Colloquium on Group Theoretical Methods in Physics, New York City, June 2006. (hep-th/0607041)
28. P. D. Mannheim, *Dynamical symmetry breaking and the cosmological constant problem*, Proceedings of the 34th International Conference in High Energy Physics (ICHEP08), Philadelphia, 2008, eConf C080730. (arXiv:0809.1200 [hep-th])
29. P. D. Mannheim, *Why do we believe in dark matter and dark energy – and do we have to?*, in "Questions of Modern Cosmology – Galileo's Legacy", M. D'Onofrio and C. Burigana (Eds.), Springer Publishing Company, Heidelberg (2009).
30. P. D. Mannheim, *Conformal Gravity Challenges String Theory*, Proceedings of the Second Crisis in Cosmology Conference, CCC-2, Astronomical Society of the Pacific Conference Series Vol. 413. (F. Potter, Ed.), San Francisco (2009). (arXiv:0707.2283 [hep-th])
31. P. D. Mannheim, *Intrinsically quantum-mechanical gravity and the cosmological constant problem*, Proceedings of the International Conference on Two Cosmological Models, Universidad Iberoamericana, Mexico City, November, 2010 (J. Auping-Birch and A. Sandoval-Villalazo, Eds.). (arXiv:1005.5108 [hep-th])

32. P. D. Mannheim, *Making the case for conformal gravity*, Proceedings of the International Conference on Two Cosmological Models, Universidad Iberoamericana, Mexico City, November, 2010 ( J. Auping-Birch and A. Sandoval-Villalazo, Eds.). (arXiv: 1101.2186 [hep-th])
33. P. D. Mannheim, *CPT symmetry without Hermiticity*, Proceedings of ICHEP2016, the 38th International Conference on High Energy Physics, Chicago, August 2016. (arXiv:1611.02100 [hep-th])

### **Philip David Mannheim – Monographs**

1. P. D. Mannheim, *Brane-localized gravity*, Full length monograph, World Scientific Publishing Company, Singapore (2005). (<http://www.worldscibooks.com/physics/5975.html>)