

## Curriculum Vitae: THEODORE A. JACOBSON

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### *EDUCATION:*

B.A., Reed College, 5/77  
Ph.D., The University of Texas at Austin, 12/83

### *PROFESSIONAL POSITIONS:*

2013 -, Distinguished Visiting Research Chair  
Perimeter Institute for Theoretical Physics, Waterloo, Canada  
7/98 -, Professor  
Dept. of Physics, University of Maryland  
7/93 to 6/98, Associate Professor  
Dept. of Physics, University of Maryland  
8/88 to 6/93, Assistant Professor  
Dept. of Physics, University of Maryland  
9/86 to 8/88, Research Associate  
Dept. of Physics, Brandeis University  
9/84 to 8/86, Research Associate  
Dept. of Physics, University of California at Santa Barbara  
3/84 to 8/84, Research Associate  
Observatoire de Meudon and Institute Henri Poincaré, Paris

### *VISITING POSITIONS:*

1/15 to 6/15, Member (1-3), Program Coordinator (4-6)  
Kavli Institute for Theoretical Physics, Santa Barbara  
1/14 to 5/14, Distinguished Visiting Research Chair  
Perimeter Institute for Theoretical Physics, Waterloo, Canada  
10/13 to 12/13, Invited Researcher  
Inst. d'Astrophysique, Paris  
9/13, Invited Professor  
Université Pierre et Marie Curie, Inst. d'Astrophysique, Paris  
1/12 to 5/12, Simons Distinguished Visiting Scholar  
Kavli Institute for Theoretical Physics, Santa Barbara  
4/04 to 6/04, Professeur Invité

# Publications of Theodore A. Jacobson

## A. Refereed Papers

1. “Quantum Stochastics: the Passage from a Relativistic to a Non-Relativistic Path Integral”, T. Jacobson and L.S. Schulman, *J. Phys.* **A17**, 375-84 (1984).
2. “Spinor Chain Path Integral for the Dirac Equation”, T. Jacobson *J. Phys.* **A17**, 2433-51 (1984).
3. “Relativistic Extension of the Analogy Between Quantum Mechanics and Brownian Motion”, B. Gaveau, T. Jacobson, M. Kac, and L.S. Schulman, *Phys. Rev. Lett.* **53**, 419-22 (1984).
4. “Random Walk Representations for Spinor and Vector Propagators”, T. Jacobson, *J. Math. Phys.* **26**, 1600-04 (1985).
5. “Vector Two-point Functions in Maximally Symmetric Spaces”, B. Allen and T. Jacobson, *Comm. Math. Phys.* **103**, 669-92 (1986).
6. “The Light-Cone Gauge  $M^{-i}$  Generator and Invariant String Field Theory”, T. Jacobson, N. Tsamis, and R. P. Woodard, *Phys. Lett.* **B176**, 387-90 (1986).
7. “A New Characterization of Half-Flat Solutions to Einstein’s Equation”, A. Ashtekar, T. Jacobson, and L. Smolin, *Comm. Math Phys.* **115**, 631-648 (1988).
8. “Non-perturbative Quantum Geometries”, T. Jacobson and L. Smolin, *Nucl. Phys.* **B299**, 295-345 (1988).
9. “The Left-Handed Spin Connection as a Variable for Canonical Gravity”, T. Jacobson and L. Smolin, *Phys. Lett.* **B196**, 39-42 (1987).
10. “Covariant Action for Ashtekar’s Form of Canonical Gravity”, T. Jacobson and L. Smolin, *Class. Quan. Grav.* **5**, 583-594 (1988).
11. “New Variables for Canonical Supergravity”, T. Jacobson, *Class. Quan. Grav.* **5**, 923-935 (1988).
12. “Tachyons and Perturbative Unitarity”, T. Jacobson, N. Tsamis, and R. P. Woodard, *Phys. Rev.* **D38**, 1823-1834 (1988).
13. “Bosonic Path Integral for Spin-1/2 Particles”, T. Jacobson, *Phys. Lett.* **B216** 150-154 (1989).
14. “Fermions in Canonical Gravity”, T. Jacobson, *Class. Quan. Grav.* **5**, L143-L148 (1988).
15. “General Relativity Without the Metric”, R. Capovilla, J. Dell, and T. Jacobson, *Phys. Rev. Lett.*, **63**, 2325-2328 (1989).
16. “Gravitational Instantons as  $SU(2)$  Gauge Fields”, with R. Capovilla, J. Dell, and T. Jacobson, *Class. Quan. Grav.*, **7**, L1-L3 (1990).

17. “Self-Dual 2-Forms and General Relativity”, R. Capovilla, J. Dell, T. Jacobson, and L. Mason, *Class. Quan. Grav.*, **8**, 41 (1991).
18. “A Pure Spin-Connection Formulation of Gravity”, R. Capovilla J. Dell, and T. Jacobson, *Class. Quan. Grav.*, **8**, 59 (1991) [Erratum, **9**, 1839 (1992)].
19. “Black Hole Evaporation and Ultra-short Distances”, T. Jacobson, *Phys. Rev.* **D44**, 1731-1739 (1991).
20. “Remarks on Pure Spin-Connection Formulations of Gravity”, R. Capovilla and T. Jacobson, *Mod. Phys. Lett. A*, **7**, 1871-1877 (1992).
21. “Degenerate Extensions of General Relativity”, T. Jacobson and J.D. Romano, *Class. Quantum Grav.*, **9**, L119-L124 (1992).
22. “The Spin Holonomy Group in General Relativity”, T. Jacobson and J.D. Romano, *Comm. Math. Phys.*, **155**, 261-276 (1993).
23. “Black Hole Radiation in the Presence of a Short Distance Cutoff”, T. Jacobson, *Phys. Rev.* **D48**, 728-741 (1993).
24. “Black Hole Entropy and Higher-Curvature Interactions”, T. Jacobson and R. C. Myers, *Phys. Rev. Lett.*, **70**, 3684-3687 (1993).
25. “Conformal Invariance of Black Hole Temperature”, T. Jacobson and G. Kang, *Class. Quantum Grav.*, **10**, L201-L206 (1993).
26. “On Black Hole Entropy”, T. Jacobson, G. Kang, and R. C. Myers, *Phys. Rev. D* **49**, 6587-6598 (1994).
27. “Collapse of Kaluza-Klein Bubbles”, S. Corley and T. Jacobson, *Phys. Rev. D* **49**, R6261-R6263 (1994).
28. “Note on Hartle-Hawking Vacua”, T. Jacobson, *Phys. Rev. D* **50**, R6031-6032 (1994).
29. “Topology of Event Horizons and Topological Censorship”, T. Jacobson and S. Venkataramani, *Class. Quantum Grav.* **12**, 1055-1061 (1995).
30. “Spinor One-Forms as Gravitational Potentials”, R.S. Tung and T. Jacobson, *Class. Quantum Grav.* **12**, L51-L55 (1995).
31. “Increase of Black Hole Entropy in Higher Curvature Gravity”, T. Jacobson, G. Kang, and R. C. Myers, *Phys. Rev. D* **52**, 3518-3528 (1995).
32. “Thermodynamics of Spacetime: The Einstein Equation of State”, T. Jacobson, *Phys. Rev. Lett.* **75**, 1260-1263 (1995).
33. “Hawking Spectrum and High Frequency Dispersion”, S. Corley and T. Jacobson, *Phys. Rev. D* **54**, 1568-1586 (1996).
34. “On the Origin of the Outgoing Black Hole Modes”, T. Jacobson, *Phys. Rev. D* **53**, 7082-7088 (1996).

35. “Focusing and the Holographic Hypothesis”, S. Corley and T. Jacobson, *Phys. Rev. D* **53**, 6720-6724 (1996).
36. “1+1 Sector of 3+1 Gravity”, T. Jacobson, *Class. Quantum Grav.* **13**, L111-L116 (1996) [Corrigendum, **13**, 3269 (1996)].
37. “Degenerate Metric Phase Boundaries”, I. Bengtsson and T. Jacobson, *Class. Quantum Grav.* **14**, 3109-3121 (1997) [Corrigendum, **15**, 3941 (1998)].
38. “Comment on ‘Accelerated Detectors in (Anti) de Sitter Spaces’”, T. Jacobson, *Class. Quantum Grav.* **15**, 251-253 (1998).
39. “Semiclassical Decay of Near-Extremal Black Holes”, T. Jacobson, *Phys. Rev. D* **57**, 4890-4898 (1998).
40. “Lattice Black Holes”, S. Corley and T. Jacobson, *Phys. Rev. D* **57**, 6269-6279 (1998).
41. “Event Horizons and Ergoregions in  ${}^3\text{He}$ ”, T.A. Jacobson and G.E. Volovik, *Phys. Rev. D* **58**, 064021 (7 pages) (1998).
42. “Effective Spacetime and Hawking Radiation from Moving Domain Wall in Thin Film of  ${}^3\text{He-A}$ ”, T.A. Jacobson and G.E. Volovik, *JETP Letters* **68**, 874-880 (1998).
43. “Black Hole Lasers”, S. Corley and T. Jacobson, *Phys. Rev. D* **59**, 124011 (12 pages) (1999).
44. “Primordial Black Hole Evolution in Tensor-Scalar Cosmology”, T. Jacobson, *Phys. Rev. Lett.* **83**, 2699-2702 (1999).
45. “Hawking Radiation on a Falling Lattice”, T. Jacobson and D. Mattingly, *Phys. Rev. D* **61**, 024017 (10 pages) (2000).
46. “Generally covariant model of a scalar field with high frequency dispersion and the cosmological horizon problem”, T. Jacobson and D. Mattingly, *Phys. Rev. D* **63**, 041502 (4 pages) (2001).
47. “Gravity with a dynamical preferred frame”, T. Jacobson and D. Mattingly, *Phys. Rev. D* **64**, 024028 (9 pages) (2001).
48. “Note on gauge theories on M/G and the AdS/CFT correspondence,” G.T. Horowitz and T. Jacobson, *JHEP* **0201**, 013 (14 pages) (2002).
49. “TeV astrophysics constraints on Planck scale Lorentz violation,” T. Jacobson, S. Liberati and D. Mattingly, *Phys. Rev. D* **66**, 081302 (4 pages) (2002).
50. “Horizon entropy” T. Jacobson and R. Parentani, *Found. Phys.* **33**, 323-348 (2003).
51. “Threshold effects and Planck scale Lorentz violation: combined constraints from high energy astrophysics,” T. Jacobson, S. Liberati and D. Mattingly, *Phys. Rev. D* **67**, 124011 (26 pages) (2003).
52. “Threshold configurations in the presence of Lorentz violating dispersion relations,” D. Mattingly, T. Jacobson, and S. Liberati, *Phys. Rev. D* **67**, 124012 (5 pages) (2003).

53. “A strong astrophysical constraint on the violation of special relativity by quantum gravity,” T. Jacobson, S. Liberati, and D. Mattingly, *Nature* **424**, 1019-1021 (2003).
54. “Static post-Newtonian equivalence of GR and gravity with a dynamical preferred frame,” C. Eling and T. Jacobson, *Phys. Rev. D* **69**, 064005 (6 pages) (2004).
55. “New limits on Planck scale Lorentz violation in QED,” T. A. Jacobson, S. Liberati, D. Mattingly and F. W. Stecker, *Phys. Rev. Lett.* **93**, 021101 (4 pages) (2004).
56. “Einstein-Aether Waves,” T. Jacobson and D. Mattingly, *Phys. Rev. D* **70**, 024003 (5 pages) (2004).
57. “Quantum field theory on a growing lattice,” B. Z. Foster and T. Jacobson, *JHEP* **0408**, 024 (28 pages) (2004).
58. “Spacetime and Euclidean Geometry,” D. Brill and T. Jacobson, *Gen. Relativ. Gravit.* **38**, 643-651 (2006).
59. “Astrophysical bounds on Planck suppressed Lorentz violation,” T. Jacobson, S. Liberati and D. Mattingly, *Lecture Notes in Physics* **669**, 101-130 (*Planck Scale Effects in Astrophysics and Cosmology*, eds. G. Amelino-Camelia and J. Kowalski-Glikman, Springer, 2005)
60. “Black hole entropy: Inside or out?,” T. Jacobson, D. Marolf and C. Rovelli, *Int. J. Theor. Phys.* **44**, 1807-1837 (2005)
61. “Lorentz violation at high energy: Concepts, phenomena and astrophysical constraints,” T. Jacobson, S. Liberati and D. Mattingly, *Annals Phys.* **321**, 150-196 (2006) (*invited article in special issue*)
62. “Post-Newtonian parameters and constraints on Einstein-aether theory,” B. Z. Foster and T. Jacobson, *Phys. Rev. D* **73** 064015 (19 pages) (2006).
63. “Non-equilibrium Thermodynamics of Spacetime,” C. Eling, R. Guedens and T. Jacobson, *Phys. Rev. Lett.* **96**, 121301 (4 pages) (2006).
64. “Spherical Solutions in Einstein-Aether Theory: Static Aether and Stars,” C. Eling and T. Jacobson, *Class. Quant. Grav.* **23** 5625-5642 (2006).
65. “Black holes in Einstein-aether theory,” C. Eling and T. Jacobson, *Class. Quant. Grav.* **23** 5643-5660 (2006).
66. “Two-dimensional gravity with a dynamical aether,” C. Eling and T. Jacobson, *Phys. Rev. D* **74**, 084027 (9 pages) (2006).
67. “Lorentz violation and perpetual motion,” C. Eling, B. Z. Foster, T. Jacobson and A. C. Wall, *Phys. Rev. D* **75**, 101502 (5 pages) (2007).
68. “Numerical simulations of gravitational collapse in Einstein-aether theory,” D. Garfinkle, C. Eling and T. Jacobson, *Phys. Rev. D* **76**, 024003 (9 pages) (2007).
69. “Black hole entanglement entropy regularized in a freely falling frame,” T. Jacobson and R. Parentani, *Phys. Rev. D* **76**, 024006 (14 pages) (2007).

70. “Neutron stars in Einstein-aether theory,” C. Eling, T. Jacobson and M. Coleman Miller, *Phys. Rev. D* **76**, 042003 (9 pages) (2007).
71. “Renormalization and black hole entropy in Loop Quantum Gravity,” T. Jacobson, *Class. Quant. Grav.* **24**, 4875-4879 (2007).
72. “When is  $g_{tt}g_{rr} = -1$ ?,” T. Jacobson, *Class. Quant. Grav.*, **24**, 5717-5719 (2007).
73. “Einstein-aether gravity: a status report,” T. Jacobson, *PoS QG-PH*, 020 (2007) (18 pages).
74. “Horizon surface gravity as 2d geodesic expansion,” T. Jacobson and R. Parentani, *Class. Quant. Grav.* **25**, 195009 (2008) (5 pages).
75. “Slices of the Kerr ergosurface,” T. Jacobson and Y. A. Soong, *Class. Quant. Grav.* **26**, 055014 (2009) (9 pages).
76. “String dynamics and ejection along the axis of a spinning black hole,” T. Jacobson and T. P. Sotiriou, *Phys. Rev. D* **79**, 065029 (2009) [14 pages].
77. “Over-spinning a black hole with a test body,” T. Jacobson and T. P. Sotiriou, *Phys. Rev. Lett.* **103**, 141101 (2009) [4 pages].  
[Erratum-ibid. **103**, 209903 (2009)]
78. “Spinning Black Holes as Particle Accelerators,” T. Jacobson and T. P. Sotiriou, *Phys. Rev. Lett.* **104**, 021101 (2010) [3 pages].
79. “Black Hole Thermodynamics and Lorentz Symmetry,” T. Jacobson and A. C. Wall, *Found. Phys.*, DOI 10.1007/s10701-010-9423-5, published online (2010) [5 pages].
80. “Extended Horava gravity and Einstein-aether theory,” T. Jacobson, *Phys. Rev. D* **81**, 101502 (2010) [4 pages].
81. “Destroying black holes with test bodies,” T. Jacobson and T. P. Sotiriou, *J. Phys.: Conf. Ser.* **222** 012041 (2010) [9 pages].
82. “Coupling the inflaton to an expanding aether,” W. Donnelly and T. Jacobson, *Phys. Rev. D* **82**, 064032 (2010) [12 pages].
83. “Stability of the aether,” W. Donnelly and T. Jacobson, *Phys. Rev. D* **82**, 081501 (2010) [4 pages].
84. “Cosmic alignment of the aether,” I. Carruthers and T. Jacobson, *Phys. Rev. D* **83**, 024034 (2011) [7 pages].
85. “Black holes in Einstein-aether and Hořava-Lifshitz gravity,” E. Barausse, T. Jacobson, and T. P. Sotiriou, *Phys. Rev. D* **83**, 124043 (2011) [17 pages].
86. “Hamiltonian structure of Hořava gravity,” W. Donnelly and T. Jacobson, *Phys. Rev. D* **84**, 104019 (2011) [8 pages].
87. “Where is the extremal Kerr ISCO?,” T. Jacobson, *Class. Quant. Grav.* **28**, 187001 (2011) [5 pages].

88. “Initial value constraints with tensor matter,” T. Jacobson, *Class. Quant. Grav.* **28**, 245011 (2011) [7 pages]
89. “A positive energy theorem for Einstein-aether and Hořava gravity,” D. Garfinkle and T. Jacobson, *Phys. Rev. Lett.* **107**, 191102 (2011) [4 pages]
90. “On horizon structure of bimetric spacetimes,” C. Deffayet and T. Jacobson, *Class. Quant. Grav.* **29**, 065009 (2012) [8 pages]
91. “Horizon entropy and higher curvature equations of state,” R. Guedens, T. Jacobson and S. Sarkar, *Phys. Rev. D* **85**, 064017 (2012) [16 pages]
92. “Gravitation and vacuum entanglement entropy,” T. Jacobson, *Int. J. Mod. Phys. D*, **21** (2012) 1242006 [7 pages]
93. “Black holes and Hawking radiation in spacetime and its analogues,” T. Jacobson, *Lect. Notes Phys.*, **870** (2013) 1-29.
94. “Black hole entanglement entropy and the renormalization group,” T. Jacobson and A. Satz, *Phys. Rev. D* **87**, 084047 (2013) [12 pages]
95. “Boundary unitarity and the black hole information paradox,” T. Jacobson, *Int. J. Mod. Phys. D*, **22** (2013) 1342002 [6 pages]
96. “Exact solutions to force-free electrodynamics in black hole backgrounds,” D. Brennan, S. E. Gralla and T. Jacobson, *Class. Quant. Grav.* **30**, 195012 (2013) [18 pages]
97. “On the renormalization of the Gibbons-Hawking boundary term,” T. Jacobson and A. Satz, *Phys. Rev. D* **89** 064034 [10 pages].
98. “Undoing the twist: The Hořava limit of Einstein-aether theory,” T. Jacobson, *Phys. Rev. D* **89**, 081501 (2014) [5 pages].
99. “Spacetime approach to force-free magnetospheres,” S. E. Gralla and T. Jacobson, *Mon. Not. Roy. Astron. Soc.* **445**, 2500-2534 (2014).
100. “Nonaxisymmetric Poynting Jets,” S. E. Gralla and T. Jacobson, *Phys. Rev. D* **92**, 043002 (2015) [12 pages].
101. “Variations on an aethereal theme,” T. Jacobson and A. J. Speranza, *Phys. Rev. D* **92**, 044030 (2015) [14 pages].
102. “Structure of Aristotelian Electrodynamics,” T. Jacobson, *Phys. Rev. D* **92**, 025029 (2015) [5 pages] [arXiv:1504.07311 [astro-ph.HE]].
103. “Black hole entropy and Lorentz-diffeomorphism Noether charge,” T. Jacobson and A. Mohd, *Phys. Rev. D* **92**, 124010 (2015) [8 pages].
104. “Entanglement Equilibrium and the Einstein Equation,” T. Jacobson, *Phys. Rev. Lett.* **116**, 201101 (2016) [6+2 pages].

105. “Spin on a 4D Feynman Checkerboard,” B. Z. Foster and T. Jacobson, *Int. Jour. of Theor. Phys. to appear* [16 pages] [arXiv:1610.01142 [quant-ph]].

## B. Preprints

1. “Mechanism of stimulated Hawking radiation in a laboratory Bose-Einstein condensate,” Y. H. Wang, T. Jacobson, M. Edwards and C. W. Clark, arXiv:1605.01027 [cond-mat.quant-gas].
2. “The Membrane Paradigm for Gauss-Bonnet gravity,” T. Jacobson, A. Mohd and S. Sarkar, arXiv:1107.1260 [gr-qc].

## C. Contributions to Books and Conference Proceedings

1. “The Geometry of Gauge Fields”, pp. 401-8, T. Jacobson and G. Sammelman; “Charge Quantization, Magnetic Monopoles”, T. Jacobson, pp.408-10; “Spin Structure; Spinor Fields; Spin Connection”, pp.415-22, C. DeWitt and T. Jacobson, contributions to *Analysis, Manifolds and Physics* by Y. Choquet and C. DeWitt with M. Dillard (North Holland Publishing Co., Adam, 1982)
2. “Feynman’s Checkerboard and Other Games”, T. Jacobson, in *Non-linear Equations in Classical and Quantum Field Theory*, ed. N. Sanchez, Lecture Notes in Physics, vol. 226 (Springer-Verlag 1985), pp. 386-95.
3. “Superspace in the Self-Dual Representation of Quantum Gravity”, T. Jacobson, in *Contemporary Mathematics*, vol. 71, ed. J. Isenberg (AMS, Providence, 1988), pp. 99-104.
4. “Supergravity”, T. Jacobson, in *New Perspectives in Canonical Gravity*, ed. A. Ashtekar (Bibliopolis, Naples, 1987), pp.195-210.
5. “Unitarity, Causality and Quantum Gravity”, T. Jacobson, in *Conceptual Problems of Quantum Gravity*, ed. A. Ashtekar and J. Stachel (Birkhäuser, 1991), pp. 212-216.
6. “Black Hole Thermodynamics and the Spacetime Discontinuum”, T. Jacobson, in *Conceptual Problems of Quantum Gravity*, ed. A. Ashtekar and J. Stachel (Birkhäuser, 1991), pp. 597-599.
7. “Black Hole Evaporation: An Open Question”, T. Jacobson, *Ann. NY Acad. Sci.*, **647**, 104-117 (1991).
8. “The Initial Value Problem in Light of Ashtekar’s Variables”, R. Capovilla, J. Dell, and T. Jacobson, in *Directions in General Relativity*, vol. 2, eds. B. L. Hu and T. A. Jacobson (Cambridge University Press, 1993), pp. 66-77.
9. “Dieter Brill: A Spacetime Perspective”, J. Isenberg, T. Jacobson, C. Misner, and H. Pfister, in *Directions in General Relativity*, vol. 2, eds. B. L. Hu and T. A. Jacobson (Cambridge University Press, 1993), pp. 1-12.
10. “Entropy Increase for Black Holes in Higher Curvature Gravity”, T. Jacobson, G. Kang, and R.C. Myers, UMDGR-95-048, in *Marcel Grossman Meeting on General Relativity, 7th*, Stanford, 1994, eds. R. Ruffini and M. Keiser (World Scientific, 1995).



11. “Black Hole Entropy in Higher Curvature Gravity”, T. Jacobson, G. Kang, and R.C. Myers, in *Proceedings of Heat Kernel Techniques and Quantum Gravity*, Winnipeg, 1994, ed. S.A. Fulling (Texas A& M University Press, 1995).
12. “Introduction to Black Hole Microscopy”, T. Jacobson, in *Recent Developments in Gravitation and Mathematical Physics*, eds. A. Macías, T. Matos, O. Obregón and H. Quevedo (World Scientific, 1996), pp. 87-112. [*invited lectures*]
13. “Black Hole Thermodynamics Today”, T. Jacobson, in *Proceedings of the Eighth Marcel Grossmann Meeting*, ed. T. Piran (World Scientific, 1998), pp. 959-967. [*report of parallel session chair*]
14. “On the Nature of Black Hole Entropy”, T. Jacobson, in *General Relativity and Relativistic Astrophysics: Eighth Canadian Conference*, AIP Conference Proceedings 493, eds. C. Burgess and R.C. Myers (AIP Press, 1999), pp. 85-97. [*plenary talk*]
15. “Trans-Planckian Redshifts and the Substance of the Space-time River”, T. Jacobson, *Prog. Theor. Phys. Supp.* **136**, 1-17 (1999). [*plenary talk*]
16. “Lorentz violation and Hawking radiation,” T. Jacobson, in *Proceeding of the Second Meeting on CPT and Lorentz Symmetry*, ed. V.A. Kostelecky (World Scientific, Singapore, 2002) 3160320 [arXiv:gr-qc/0110079].
17. “High energy constraints on Lorentz symmetry violations,” S. Liberati, T. A. Jacobson and D. Mattingly, in *Proceeding of the Second Meeting on CPT and Lorentz Symmetry*, ed. V.A. Kostelecky (World Scientific, Singapore, 2002) 298-304 [arXiv:hep-ph/0110094].
18. “Relativistic gravity with a dynamical preferred frame,” D. Mattingly and T. Jacobson, in *CPT and Lorentz Symmetry II*, ed. V.A. Kostelecky (World Scientific, Singapore, 2002) [arXiv:gr-qc/0112012], 5pp.
19. “Black hole and baby universe in a thin film of  $^3\text{He-A}$ ,” T. Jacobson and T. Koike, in *Artificial Black Holes*, M. Novello, M. Visser, and G. Volovik (World Scientific, 2002) [arXiv:cond-mat/0205174], 21 pp. [*invited talk & chapter*]
20. “Introduction to quantum fields in curved spacetime and the Hawking effect,” T. Jacobson, in *Lectures on Quantum Gravity*, eds. A. Gomberoff and D. Marolf (Springer, 2005), 39-89 [arXiv:gr-qc/0308048].
21. “Quantum gravity phenomenology and Lorentz violation,” T. Jacobson, S. Liberati and D. Mattingly, in *Particle Physics and the Universe*, eds. J. Trampeti/c and J. Wess (Springer-Verlag, 2005), 83-98 [arXiv:gr-qc/0404067].
22. “Einstein-aether theory,” C. Eling, T. Jacobson and D. Mattingly, in *Deserfest*, eds. J. Liu, K. Stelle, and R. P. Woodard (World Scientific, 2006) 163-179 [arXiv:gr-qc/0410001].
23. “Einstein-aether gravity: theory and observational constraints,” T. Jacobson, to appear in *CPT and Lorentz Symmetry IV*, ed. V.A. Kostelecky (World Scientific, Singapore, 2008) arXiv:0711.3822 [gr-qc].
24. “Destroying black holes with test bodies,” T. Jacobson and T. P. Sotiriou, *J. Phys. Conf. Ser.* **222**, 012041 (2010) [arXiv:1006.1764 [gr-qc]].

25. “Black hole entropy and the renormalization group,” A. Satz and T. Jacobson, talk given by A. Satz at the Thirteenth Marcel Grossmann Meeting, Stockholm, 2012, arXiv:1301.3171 [hep-th].
26. “Horizon entropy and higher curvature equations of state,” R. Guedens, T. Jacobson and S. Sarkar, *J. Phys. Conf. Ser.* **405**, 012031 (2012).

#### D. Abstracts of Contributed Papers

1. “Quantum Gravitation and the Distinction Between Inertial Mass and Active Gravitational Mass: an Experimental Proposal”, T. Jacobson, in *10th International Conference on General Relativity and Gravitation. Contributed Papers, vol. 2*, ed. B. Bertotti *et al.* (Consiglio Nazionale delle Ricerche, Roma, 1983), pp. 490-92.
2. “The Importance of Being Unitary”, T. Jacobson, in *Abstracts of Contributed Papers: 12th International Conference on General Relativity and Gravitation*, (1989).
3. “Degenerate Extensions of General Relativity”, T. Jacobson and J.D. Romano, in *Abstracts of Contributed Papers: 13th International Conference on General Relativity and Gravitation*, (1992).
4. “The Spin Holonomy Group in General Relativity”, T. Jacobson and J.D. Romano, in *Abstracts of Contributed Papers: 13th International Conference on General Relativity and Gravitation*, (1992).
5. “Black Holes as Microscopes”, T. Jacobson, in *Abstracts of Contributed Papers: 13th International Conference on General Relativity and Gravitation*, (1992).
6. “Topology of Event Horizons and Topological Censorship”, T. Jacobson and S. Venkataramani, in *Abstracts of Contributed Papers: 14th International Conference on General Relativity and Gravitation*, (1995).
7. “Thermodynamics of Spacetime: The Einstein Equation of State”, T. Jacobson, in *Abstracts of Contributed Papers: 14th International Conference on General Relativity and Gravitation*, (1995).
8. “Spectrum of Hawking Radiation with High Frequency Dispersion”, S. Corley and T. Jacobson, in *Abstracts of Contributed Papers: 14th International Conference on General Relativity and Gravitation*, (1995).

#### E. Other Writing

1. “Geometric Algebra: Inner and Outer Products”, T. Jacobson, Senior Thesis, Reed College (1977).
2. “Spinor Chain Path Integral for the Dirac Electron”, T. Jacobson, Ph.D. Thesis, The University of Texas at Austin (1983).
3. “Unitarity in Discrete Quantum Mechanics”, T. Jacobson, UCSB preprint TH-11 (1985).

4. Book review: *Gravity, Gauge Theories and Quantum Cosmology*, Jayant V. Narlikar and T. Padmanabhan, in *American Scientist*, **76**, 395 (1988).
5. Lecture Notes on Black Hole Thermodynamics (1989), T. Jacobson, unpublished.
6. “A Spacetime Primer”, T. Jacobson,  
<http://www.glue.umd.edu/~tajac/spacetimeprimer.ps>
7. “Black Hole Entropy and Induced Gravity”, T. Jacobson, preprint UMDGR-94-134, gr-qc/9404039 (1994).
8. “Introductory Lectures on Black Hole Thermodynamics”, T. Jacobson, Utrecht preprint THU-96/27 (1996),  
<http://www.glue.umd.edu/~tajac/BHTlectures/lectures.ps>.
9. “Comments on “Improved limit on quantum-spacetime modifications of Lorentz symmetry from observations of gamma-ray blazars,” T. Jacobson, S. Liberati, and D. Mattingly, [arXiv:gr-qc/0303001] (2003) (4 pages).
10. “Propagating spinors on a tetrahedral spacetime lattice,” B. Z. Foster and T. Jacobson, arXiv:hep-th/0310166 (4 pages).
11. “An ECHO of Black Holes”, T. Jacobson and R. Parentani, *Scientific American*, Dec. 2005 (8 pages).
12. “Might black holes reveal their inner secrets?,” T. Jacobson and T. P. Sotiriou, arXiv:1006.1763 (2010) [8 pages] (*for FQXi Essay Competition, 3rd prize winner*)
13. “KITP Program report: Bits, Branes, and Black Holes,” T. Jacobson and D. Marolf, in *Matters of Gravity, Volume 40, Fall 2012*, Ed. D. Garfinkle (8 pages).
14. “Comment on “Scalar Einstein-Aether theory,” T. Jacobson and A. J. Speranza, arXiv:1405.6351 [gr-qc].

## F. Books Edited

1. *Directions in General Relativity, vol. 2*, eds. B. L. Hu and T. A. Jacobson (Cambridge University Press, 1993).

Université de Paris VII

8/03 to 8/04, Invited Visiting Researcher  
Inst. d'Astrophysique, Paris

1/99 to 7/99, Research Program Invited Participant  
Inst. for Theoretical Physics, Santa Barbara

7/95 to 6/96, Sabbatical Visitor  
Inst. for Theoretical Physics, University of Utrecht

6/94 to 8/94, Invited Visiting Researcher  
Inst. for Theoretical Physics, University of Bern

1/93 to 7/93, Research Program Invited Participant  
Inst. for Theoretical Physics, Santa Barbara

1/90 to 7/90, Visiting Researcher  
Dept. of Physics, University of California at Santa Barbara

*AWARDS and GRANTS:*

University Fellowships, Univ. Texas at Austin, 1979-1981

Fulbright Scholarship for Graduate Study in Israel, 1982-1983

NSF Research Grant, 8/89-7/91

Excellence in Teaching Award, University of Maryland, 9/89

GRB Semester Research Award, University of Maryland, 1990

NSF Research Grant, 8/91-8/94

Invited Visiting Scientist, ITP, Santa Barbara, 1/93-7/93

Invited Visiting Researcher, ITP, Univ. of Bern, 6/94-8/94

NSF Research Grant, 11/94-2/98

GRB Semester Research Award, University of Maryland, 1995

Invited Visitor, Univ. of Utrecht, 7/95-6/96

Invited Researcher, Schrödinger Inst., Vienna, 7/14/96-8/2/96

NSF Research Grant (co-P.I. with B.L. Hu), 4/98-3/03

Invited Visiting Scientist, ITP, Santa Barbara, 1/99-7/99

Invited Researcher, Schrödinger Inst., Vienna, 7/01/02-7/12/02

NSF Research Grant (co-P.I. with B.L. Hu), 7/03-6/06

Professeur Invité, Univ. de Paris VII, 3 months, 2004

APS Fellow, Elected 2004

NSF Research Grant, 7/06-6/09

Invited Program Participant, KITP, 8-26 Jan, 2007

FQXi Research Grant, 9/1/08-8/31/10

NSF Research Grant, 7/09-6/12

Univ. Maryland Distinguished Scholar-Teacher Award, 2008-9

APS Outstanding Referee Award, 2009

FQXi Research Grant, 1/1/11-12/31/12  
KITP Simons Distinguished Visiting Scholar, Jan.-May, 2012  
AAAS Fellow, Elected 2012  
NSF Research Grant, 7/14-6/17

*PROFESSIONAL SERVICE:*

Member of AIP Committee to Review the  
Journal of Mathematical Physics, 1991  
Refereeing papers and grant proposals (about 25 per year)  
Co-organizer (with Bei-Lok Hu), International Symposium  
on Directions in General Relativity, May 27-29, 1993  
Editorial Board Member, Physical Review D, 1996-98  
Organizer of Black Hole Thermodynamics parallel session,  
Eighth Marcel Grossmann Meeting, Jerusalem, June 1997.  
Divisional Associate Editor, Physical Review Letters, 2001—  
Executive Committee,  
APS Topical Group on Gravitation, 2001-04  
Nominating Committee of the International Society  
for General Relativity and Gravitation, 2001-2007  
Scientific Advisory Board (steering committee),  
KITP, Santa Barbara, 2001-2004  
Five lectures at Chilean School on Quantum Gravity,  
Jan. 4-14, 2002  
Three lectures at Winter School of Theoretical Physics:  
Quantum Gravity Phenomenology, Feb. 4-14, 2004  
Co-organizer, 6th Eastern Gravity Meeting, March 2003  
Organizer, APS April '03 Meeting Focus Session:  
Phenomenology of Quantum Gravity  
NSF proposal review panels (several times)  
International Scientific Committee  
Non Perturbative Quantum Gravity, 3-7 May 2004  
CIRM, Luminy, Marseille, France  
Scientific Organizing Committee  
21st IAP Colloquium, Institut d'Astrophysique de Paris  
GR18 Travel Grant Selection Committee, April 2007  
Scientific Advisory Committee  
From Quantum to Emergent Gravity, 11-15 June, 2007  
SISSA, Trieste, Italy  
GRG Society, Bergmann-Wheeler Thesis prize committee, 2009  
APS Meeting Session organizer, Feb. 2010  
“Quantum Black Holes: Theory and Applications”

Scientific Advisor  
 KITP Program: “Bits, branes and black holes,” 3/12-5/12  
 Nominating Committee  
 APS Topical Group on Gravitation, 2012  
 Organizing Committee, Peyresq Physics Conf. Series  
 Organizing Committee, Kavli IPMU Focus Week on  
 Gravity and Lorentz Violations, 2013  
 Selection Committee, APS Dannie Heineman Prize, 2013-4  
 Co-Coordinator, KITP Program:  
 “Quantum Gravity Foundations: UV to IR”, 3/15-6/15  
 Selection Committee Chair, GRG Bergmann-Wheeler Prize, 2015

*DEPARTMENTAL and UNIVERSITY SERVICE:*

Center for Theoretical Physics Committee, 1988-90  
 Graduate Student Advising, 1989-91  
 Extended Qualifying Exam Committee, 1989-90  
 Qualifying Exam Oral Committees, 1989-92  
 Ph.D. thesis committees, 1989-  
 Executive Committee of the Physics Council, 1990-91  
 Qualifying Exam Committee, 1990-92, (Chairman, 1991-92)  
 Graduate Committee, 1991-92  
 Undergraduate Advisor (1 student), 1992-94  
 Colloquium Committee, 1993-95  
 APT Committee, 1993-95  
 Co-organizer, Foundations and Frontiers seminar, 1993-2011  
 Grad Lab Subcommittee, 1995  
 Expanded Qualifying Exam Committee, 1996-  
 Graduate Admissions Committee, 1996-97  
 Deans Award for Excellence in Teaching Committee, 1997  
 Qualifying Exam Mini-Committee, 1997-2001  
 Community and High School Liasons Committee, 1997-98  
 Promotion Committee for V. Yakovenko, 1998  
 Joint Theory Seminar/CTP Committee, 1998-1999  
 CTP Committee, 1998-1999  
 Campus Senate, 1999-2002  
 Teaching peer review for S. Anlage, 2001  
 Undergraduate education committee, 2001-  
 Physics Website committee, 2002  
 UMD-Goddard cooperation development, 2002-2004  
 Gravitational wave faculty search committee, 2002-2004 (Chair)  
 MD Day lecture 4/26/03: Relativity, Time and Black Holes  
 GRID Symposium judging (annually)  
 String/Gravity Faculty Search Committee, 2004/5  
 Physics Citation advisor  
 CMPS APT Committee, 2004/5, 2005/6 (Chair)  
 Part./Str./Grav./Cosmo. Fac. Search Comm., 2005/6 (Co-Chair)

Astronomy Department Chair Search Comm., 2007  
Physics Department Priorities Committee, 2008-2010  
Organizer, Maryland Ctr. Fund. Physics Colloquium, 2007/8  
JSI Physics Search Committee, 2010/11  
JSI minisymposia Organizing Committee. 2011/12  
JSI Web/Outreach Committee, 2012/13  
Promotion Committee for Manuel Tiglio, Chair, 2012  
Teaching Review, Ben Dreyfus, 2014-5  
JSI Prize Postdoc Selection Committee, 2015-6