

CURRICULAR VITAE

Yee Jack Ng

Education:

B.A. (Distinction) 1968 University of California, Berkeley
M.A. 1969 Harvard University (graduate advisor: S. Glashow)
Ph.D. 1974 Harvard University (thesis advisor: Julian Schwinger)

Previous Positions:

1974-1976 Research Associate, Institute for Advanced Study, Princeton
1976-1978 Research Associate, Stanford Linear Accelerator Center, Stanford

Spring 82 Visiting Member, Institute for Advanced Study
Fall 1982 Visiting Physicist, Stanford Linear Accelerator Center
1978-1987 Assistant Professor, Associate Professor of Physics, UNC-CH
Fall 1993 Visiting Scientist, M.I.T.
Spring 94 Visiting Member, Institute for Advanced Study
Fall 1999 Visiting Scientist, M.I.T.
Fall 2010 Scientific Visitor, European Southern Observatory, Garching, Germany

Present Position:

Professor of Physics, UNC (since 1987); Kenan Professor (since 2007)

Research Interests:

Theoretical particle physics, field theory, gravitation, and cosmology

Miscellaneous:

Chairman, Organizing Committee, Eastern Theoretical Physics Conference 1981
Organizing Committee, PASCOS Symposium 2001
Regional coordinator, Overseas Chinese Physicists Association (since 1998)
Director and Administrative Secretary, Julian Schwinger Foundation for Physics Research

Academic Honors include:

Alfred P. Sloan Fellowship (1979 - 1982)
Favorite faculty award at University of North Carolina, 2000
"R & D Star to Watch," IndustryWeek magazine, 2001
Edward Kidder Graham Award, UNC, 2002
University-wide teaching award (the William Friday/Class of 1986 Award for Excellence in Teaching at UNC), 2006.

Scientific Publications

Y. JACK NG

1. **Scalar- and Matter-Dominated Cosmologies in Schwinger's Scalar-Tensor Theory of Gravity** (with K. Milton), Phys. Rev. D 10, 420 (1974).
2. **Electron-Electron Scattering: Spectral Forms for the Invariant Amplitudes to Order e^4** (with L. De Raad, Jr.), Phys. Rev. D 10, 683 (1974).
3. **Electron-Electron Scattering II: Helicity Cross Sections for Positron-Electron Scattering** (with L. De Raad, Jr.), Phys. Rev. D 10, 3440 (1974).
4. **Electron-Electron Scattering III: Helicity Cross Sections for Electron-Electron Scattering** (with L. De Raad, Jr.) Phys. Rev. D 11, 1586 (1975).
5. **Renormalization Constants for Scalar, Pseudoscalar, and Tensor Currents** (with S. Adler et al.), Phys. Rev. D 11, 3309 (1975).
6. **Dimuon Production Associated with a Scalar Intermediate Boson Carrying Dileptonic Quantum Number** (with S. Adler et al.), Phys. Rev. D 12, 2639 (1975).
7. **Application of Current Algebra Techniques for Soft Pion Production by the Weak Neutral Current: Second Class V, A Case** (with S. Adler et al.), Phys. Rev. D 12, 3522 (1975).
8. **Application of Current Algebra Techniques for Soft Pion Production by the Weak Neutral Current: S, P, T Case** (with S. Adler et al.), Phys. Rev. D 12, 3501 (1975).
9. **Isospin 1/2 Nucleon Resonance Production by a V, A Weak Neutral Current** (with S. Adler et al.), Phys. Rev. D 13, 1216 (1976).
10. **Photon Pairing Instabilities: A Microscopic Origin of Gravitation?** (with S. Adler, J. Lieberman and H. S. Tsao), Phys. Rev. D 14, 359 (1976).
11. **Pair Creation by Photon-Photon Scattering in a Strong Magnetic Field** (with W. Y. Tsai), Phys. Rev. D 16, 286 (1977).
12. **Regularization of the Stress-Energy Tensor for Vector and Scalar Particles Propagating in a General Background Metric** (with S. Adler and J. Lieberman), Ann. Phys. (N. Y.) 106, 279 (1977).
13. **Generalization of the Quark-Confining String** (with S. H. Tye), Phys. Rev. D 16, 2468 (1977).
14. **Jet Structure in e^+e^- annihilation as a Test of Q.C.D. and the Quark Confining String** (with T. DeGrand and S. H. Tye), Phys. Rev. D 16, 3251 (1977).

15. **Is Upsilon a Bound State of Exotic Quarks?** Phys. Rev. Lett. 41, 6 (1978) (with S. H. Tye).
16. **Angular Distributions of Heavy Quark Jets in e^+e^- Annihilation** (with G. Grunberg and S.-H Tye), Phys. Rev. D 21, 62 (1980).
17. **Energy Cone Distribution Around the Jet Axis in e^+e^- Annihilation** (with G. Grunberg and S.-H Tye), Nucl. Phys. B 168, (1980).
18. **Measuring the Triple-Gluon Vertex** (with G. Grunberg and S.-H Tye), Phys. Lett. 93B, 281 (1980).
19. **Jet Structure in e^+e^- Annihilation**, Proceedings of the 1980 Guangzhon Conference on Theoretical Particle Physics (Science Press, Beijing, China, 1980), Vol. 1, 550-556.
20. **Q.C.D. Jets and Z**, Proceedings of the Cornell Z* Theory Workshop (1981) page 155.
21. **Hyperfine Splittings in Heavy Quark Systems** (with W. Buchmuller and S.-H. H. Tye), Phys. Rev. D24, 3003 (1981).
22. **Massive Neutrinos in $E(6)$ Unified theory with Harmless Axion** (with P. H. Frampton, T. W. Kephart and H. van Dam), Phys. Lett. 112B, 50 (1982).
23. **The Exchange of Massless Spin-Two Particles** (with J. J. van Der Bij and H. van Dam), Physica 116A, 307 (1982).
24. **Quarkonium Hyperfine Splittings and the Q. C. D. Scale Parameter** (with T. Kephart and H. van Dam), Phys. Rev. D 26, 3260 (1982).
25. **A Supersymmetric Preon model of Particle Physics** (with B. Ovrut), Phys. Lett. 125B, 147 (1983).
26. **A Supersymmetric Confining Model of the Weak Interactions** (with B. Ovrut), Phys. Rev. D29, 138 (1984).
27. **Spacetime Thermodynamics and the Inflationary Universe** (with T. Kephart and H. van Dam), Ap. J. 277, 478 (1984).
28. **A Supersymmetric Left-Right Confining Model of the Weak Interactions** (with B. Ovrut), Nucl. Phys. B233, 144 (1984).
29. **The Properties of Scalar Quark Bound States** (with P. Moxhay and S. S. H. Tye), Phys. Lett. 158B, 170 (1985).
30. **A Comment on Fermionic Tachyons and Poincare Representations** (with H. van Dam and L. C. Biedenharn), Phys. Lett. 158B, 227 (1985).
31. **Spin-dependent Forces in Heavy-quark Systems** (with J. Pantaleone and S. S. H. Tye) Phys. Rev. Lett. 55, 916 (1985).

32. **A Supersymmetric Electroweak Model with a Light Squark** (with K. Yamamoto, P. Moxhay and S. S. H. Tye), Prog. Theor. Phys. 74, 576 (1985).
33. **One-loop Finiteness in $O(32)$ Open Superstring Theory** (with P. Frampton and P. Moxhay) Phys. Rev. Lett. 55, 2107 (1985).
34. **Spin Splittings in Heavy Quarkonia** (with J. Pantaleone and S. S. H. Tye) Phys. Rev. D 33, 777 (1986).
35. **Modular Invariance in Closed Superstrings** (with P. Frampton and Y. Kikuchi) Phys. Lett. 174B, 262 (1986).
36. **Heterotic String Modifications of Einstein's and Yang-Mills' Actions** (with Y. Kikuchi and C. Marzban) Phys. Lett. 176B, 57 (1986).
37. **Explicit Evaluation of Pentagon Diagram for Open Superstrings** (with P. Frampton and P. Moxhay) Nucl. Phys. 276B, 599 (1986).
38. **Regularization of Open Superstring from Orientable Closed Surface** (with P. Frampton and A. Kshirsagar) Phys. Rev. D34, 2532 (1986).
39. **Narrow e^+e^- Peaks in Heavy-Ion Collisions as Possible Evidence of a Confining Phase of QED** (with Y. Kikuchi) Phys. Rev. D36, 2880 (1987).
40. **Nonperturbative Quantum Electrodynamics in a Photon-Condensate Background Field** (with Y. Kikuchi) Phys. Rev. D38, 3578 (1988).
41. **Alternative Formulations of First Quantized Covariant String Action** (with Z. Y. Zhu, H. Kawai and S. H. H. Tye) Phys. Lett. 215B, 287 (1988).
42. **Strong Coupling QED and its Possible Relation to Anomalous Heavy-ion Events**, in "New Trends in Strong Coupling Gauge Theories", edited by M. Bando, T. Muta and K. Yamawaki, World Scientific Publishing Co., Singapore, p. 206 (1989).
43. **Anomalous e^+e^- Events as Evidence of a QED Phase Transition**, in "Tests of Fundamental Laws of Physics", edited by O. Fackler and J. Tran Thanh Van, Editions Frontieres, France, p. 203 (1989).
44. **Comment on the q -Analogues of the Harmonic Oscillator**, J. Phys. A: Math. Gen. 23, 1023-1027 (1990).
45. **The Maxwell-Chern-Simons Casimir Effect** (with K. A. Milton) Phys. Rev. D42, 2875-2880 (1990).
46. **Possible Solution to the Cosmological-Constant Problem** (with H Van Dam), Phys. Rev. Lett. 65, 1972-1974 (1990).
47. **Families in confining theory of quarks, leptons and additional fermions** (with P.H. Frampton) Phys. Rev. D42, 3242 -3245 (1990).

48. **Sarks as Additional Fermions** (with J. Agrawal et al.), Nucl.Phys. B351, 161 (1991).
49. **Unimodular Theory of Gravity and the Cosmological Constant** (with H. van Dam), J. Math. Phys., 32, 1337 (1991).
50. **Are there Background Fields that Can Induce QED Phase Transitions at Weak Coupling?** (with Y. Kikuchi), in "Vacuum Structure in Intense Fields", edited by H.M. Fried and B. Muller (Plenum Press, New York 1991), p. 273.
51. **A Simple Ansatz Relating All Mixing Angles to Quark Mass Ratios** (with D. Ng), Mod. Phys. Lett. A6, 2243 (1991).
52. **The Cosmological Constant Problem and a Possible Solution**, in Proceedings of the 1991 Joint International Lepton-Photon Symposium and Europhysics Conference on High Energy Physics, ed. S. Hegarty et al. (World Scientific, Singapore, 1992), p. 506.
53. **The Cosmological Constant Problem**, Int'l J. Mod. Phys. D1, 145 (1992).
54. **Maxwell-Chern-Simons Casimir Effect. II. Circular Boundary Conditions** (with K.A. Milton), Phy. Rev. D46, 842 (1992).
55. **Possible Solution of Strong CP Problem in Generalized Unimodular Gravity** (with P.H. Frampton and H. Van Dam), J. Math. Phys., 33, 3881 (1992).
56. **q -Deformed Angular Momentum Operator and Possible Application to Triatomic Molecules** (with A. Kundu), Phys. Lett. A197, 221 (1995).
57. **Limit to Spacetime Measurement** (with H. Van Dam), Mod. Phys. Lett. A9, 335 (1994).
58. **Limitation to Quantum Measurements of Spacetime Distances** (with H. Van Dam), in Proc. of conference on Fundamental Problems in Quantum Theory, Annals of N.Y. Acad. of Sciences 775, 579 (1995).
59. **Fractional Exclusion Statistics and Anyons** (with W. Chen), Phys. Rev. B51, 14479 (1995).
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62. **From Fractional Statistics to M-Statistics** (with W. Chen and H. van Dam), Proceedings of the First International Conference on Frontiers of Physics, ed. L.F. Li et al. (World Scientific, Singapore, 1996), 766.

63. **Schwinger-Dyson Equation Approach to Chiral Symmetry Breaking in an External Magnetic Field** (with C.N. Leung and A.W. Ackley), Phys. Rev. D54, 4181 (1996).
64. **Julian Schwinger: the Physicist, the Teacher, and the Man**, ISBN 9810225318, ISBN 9810225326 (pbk), editor (World Scientific, Singapore), 1996; included in this book is the article, **"Schwinging a Sorcerer's Wand: Julian and I."**
65. **Casimir Energy for a Spherical Cavity in a Dielectric: Applications to Sonoluminescence** (with K. A. Milton), Phys. Rev. E55, 4207 (1997).
66. **Comment on "Critique of Proposed Limit to Space-time Measurement Based on Wigner's Clocks and Mirrors" by L. Diosi and B. Lukacs** (with H. van Dam), Europhys. Lett. 38, 401 (1997).
67. **Chiral Symmetry Breaking in a Uniform External Magnetic Field** (with D.S. Lee and C.N. Leung), Phys. Rev. D55, 6504 (1997).
68. **Observability of the Bulk Casimir Effect: Can the Dynamical Casimir Effect be Relevant to Sonoluminescence?** (with K.A. Milton), Phys. Rev. E57, 5504 (1998).
69. **Longevity and Highest-Energy Cosmic Rays** (with P.H. Frampton and B. Keszthelyi), Intl. J. Mod. Phys. D8, 117 (1999).
70. **Chiral symmetry breaking in a uniform external magnetic field. II. Symmetry restoration at high temperatures and chemical potentials** (with D.S. Lee and C.N. Leung), Phys. Rev. D 57, 5224 (1998).
71. **Magnetic Catalysis of Chiral Symmetry Breaking and the Pauli Problem**, Proceedings of Advanced ICFA Beam Dynamics Workshop on Quantum Aspects of Beam Physics, ed. P. Chen (World Scientific, 1999), p.557.
72. **Cosmic Background Radiation Temperature Anisotropy: Position of First Doppler Peak** (with P.H. Frampton and R. Rohm), Mod. Phys. Lett. A13, 2541 (1998).
73. **The Effective Potential of Composite Fields in Weakly Coupled QED in a Uniform External Magnetic Field** (with D.S. Lee, P.N. McGraw, and I.A. Shovkovy), Phys. Rev. D59, 085008 (1999).
74. **Fermion Damping in a Fermion-Scalar Plasma** (with D. Boyanovsky, H.J. de Vega, D.S. Lee, and S.Y. Wang), Phys. Rev. D59, 105001 (1999).
75. **Damping Rates and Mean Free Paths of Soft Fermion Collective Excitations in a Hot Fermion-Gauge-Scalar Theory** (with S.Y. Wang, D. Boyanovsky, H.J. de Vega, and D.S. Lee), Phys. Rev. D61, 065004 (2000).

76. **Measuring the Foaminess of Space-Time with Gravity-Wave Interferometers** (with H. van Dam), gr-qc/9906003, Foundations of Physics 30, 795 (2000).
77. **On Wigner's Clock and the Detectability of Spacetime Foam with Gravitational-Wave Interferometers** (with H. van Dam), Phys. Lett. B477, 429 (2000).
78. **A Small but Nonzero Cosmological Constant** (with H. van Dam), hep-th/9911102, Int. J. Mod. Phys. D10, 49 (2001).
79. **CMB with Quintessence: Analytical Approach and CMB-FAST** (with J.L. Crooks, J.O. Dunn, P.H. Frampton, and R.M. Rohm), astro-ph/0010404, Mod. Phys. Lett. A16, 63 (2001).
80. **From Computation to Black Holes and Space-time Foam**, gr-qc/0006105, Phys. Rev. Lett. 86, 2946 (2001); erratum: Phys. Rev. Lett. 88, 139902-1 (2002).
81. **Energy-momentum Uncertainties as Possible Origin of Threshold Anomalies in UHECR and TeV-gamma Events** (with D.-S. Lee, M.C. Oh, and H. van Dam), hep-ph/0010152, Phys. Lett. B 507, 236 (2001).
82. **Clocks, Computers, Black Holes, Spacetime Foam, and Holographic Principle**, hep-th/0010234, Proceedings of the Third Joint Meeting of Chinese Physicists Worldwide, eds. N.P. Chang et al (World Scientific, Singapore, 2002) p. 235.
83. **Proceedings of the Eighth International Conference on Particles, Strings and COSmology** (edited with P. Frampton), Rinton Press, New Jersey (2001).
84. **Why 3+1 Metric Rather Than 4+0 Or 2+2?** (with H. van Dam), hep-th/0108067, Phys. Lett. B 520, 159 (2001).
85. **Spacetime Foam**, gr-qc/0201022, Int. J. Mod. Phys. D 11, 1585 (2002).
86. **Anomalous Particle-production Thresholds through Systemic and Non-systematic Quantum-gravity Effects** (with G. Amelino-Camelia and H. van Dam), gr-qc/0204077, Astropart. Phys. 19, 729 (2003).
87. **Black Holes, Mergers, and the Entropy Budget of the Universe** (with T. W. Kephart), gr-qc/0204081, JCAP 11 (2003) 011.
88. **Comment on "Uncertainty in Measurements of Distance"** (with H. van Dam), gr-qc/0209021, Class. Quant. Grav. 20, 393 (2003).
89. **A Geometrical Derivation of the Dirac Equation** (with H. van Dam), hep-th/0211002, Phys. Lett. A309, 335 (2003).
90. **The Partition Function and Level Density for Yang-Mills-Higgs Quantum Mechanics** (with S.G. Matinyan), hep-th/0212304, J. Phys. A36, L417 (2003)

91. **Probing Planck-scale Physics with Extragalactic Sources?** (with W.A. Christiansen and H. van Dam), astro-ph/0302372, ApJ Lett. 591, L87 (2003).
92. **Selected Topics in Planck-scale Physics**, gr-qc/0305019, Mod. Phys. Lett. A18, 1073 (2003).
93. **Implications of Spacetime Quantization for the Bahcall-Waxman Neutrino Bound** (with G. Amelino-Camelia, M. Arzano, T. Piran, and H. van Dam), hep-ph/0307027, JCAP 02 (2004) 009.
94. **Quantum Foam**, gr-qc/0401015, in the Proceedings of the Tenth Marcel Grossman Meeting on General Relativity, ed. M. Novello et al. (World Scientific, Singapore, 2005), 2150.
95. **Spacetime Foam, Holographic Principle, and Black Hole Quantum Computers** (with H. van Dam), gr-qc/0403057, Int. J. Mod. Phys. A20, 1328 (2005); also in the Proceedings of the 32nd Coral Gables Conference (“The Launching of La Belle Epoque of High Energy Physics & Cosmology”), ed. T. Curtright et al. (World Scientific, Singapore, 2004), 47.
96. **Quantum Foam and Quantum Gravity Phenomenology**, gr-qc/0405078, in the Proceedings of the 40th Karpacz Winter School on Theoretical Physics (“Planck Scale Effects in Astrophysics and Cosmology”), ed. J. Kowalski-Glikman and G. Amelino-Camelia, Lect. Notes Phys. 669 (Springer, Berlin Heidelberg, 2005), 321.
97. **Spacetime Fluctuations**, Il Nuovo Cimento 120B, 867 (2005); also in the Proceedings of the Vulcano Workshop on “Frontier Objects in Astrophysics and Particle Physics,” ed. F. Giovannelli and G. Mannocchi (Societa Italiana di Fisica, Bologna, Italy, 2005), 531.
98. **Black Hole Computers** (with S. Lloyd), Scientific American 291, # 5, 52 (2004). Reprinted in Special Edition on Astrophysics “Reality-Bending Black Holes,” Scientific American Reports 17, # 1, 82 (2007).
99. **Neutrix Calculus and Finite Quantum Field Theory** (with H. van Dam), J. Phys. A: Math. Gen. 38, L317 (2005).
100. **An Application of Neutrix Calculus to Quantum Field Theory** (with H. van Dam), Int. J. Mod. Phys. A 21, 297 (2006).
101. **Probing Spacetime Foam with Extragalactic Sources** (with W.A. Christiansen and H. van Dam), Phys. Rev. Lett. 96, 051301 (2006); (erratum) Phys. Rev. Lett. 98, 259903 (2007).
102. **From Spacetime Foam to Holographic Foam Cosmology** (with M. Arzano and T.W. Kephart), gr-qc/0605117, essay to honor R.D. Sorkin (<http://plato.tp.ph.ic.ac.uk/sorkin>); Phys. Lett. B 649, 243 (2007).

103. **Hubble Meets Planck: A Cosmic Peek at Quantum Foam**, gr-qc/0701124, in the Proceedings of the Eleventh Marcel Grossman Meeting, ed. H. Kleinert et al. (World Scientific, Singapore, 2008), 2621.
104. **Reply to Diosi’s Comment on “Probing Spacetime Foam with Extragalactic Sources”** (with W. A. Christiansen and H. van Dam), Phys. Rev. Lett. 98, 259002 (2007).
105. **Holographic Foam, Dark Energy, and Infinite Statistics**, gr-qc/0703096, Phys. Lett. B 657, 10 (2007).
106. **Spacetime Foam: from Entropy and Holography to Infinite Statistics and Nonlocality**, arXiv:0801.2962 [hep-th], Entropy 10, 441 (2008).
107. **Turbulence and Holography** (with V. Jejjala, D. Minic and C. H. Tze), arXiv:0806.0030 [hep-th], Class. Quantum Grav. 25, 225012 (2008).
108. **Spacetime Foam and Dark Energy**, arXiv:0808.1261 [gr-qc], in the Proc. of The Dark Side of the Universe, the Fourth Int’l Workshop on the Dark Side of the Universe, ed. S. Khalil (AIP Conference Proceedings, Melville, NY, 2009), 74.
109. **Replacing Anthropy with Entropy: Does It Work?** (with I. Maor, T. W. Kephart, L Krauss, and G. D. Starkman), arXiv:0812.1015 [hep-th].
110. **Projective Geometry and PT-Symmetric Dirac Hamiltonian** (with H. van Dam), arXiv:0901.2579 [hep-th], Phys. Lett. B 673, 237 (2009).
111. **Limits on Spacetime Foam** (with W. A. Christiansen, D. Floyd and E. Perlman), arXiv:0912.0535 [astro-ph], Phys. Rev. D 83, 084003 (2011).
112. **String Theory and Turbulence** (with V. Jejjala, D. Minic and C. H. Tze), arXiv:0912.2725 [hep-th], Mod. Phys. Lett. A25, 2541 (2010).
113. **Holographic Quantum Foam**, arXiv:1001.0411 [gr-qc], in Proc. of the 12th Marcel Grossmann Meeting on General Relativity, ed. by T. Damour et al. (World Scientific, Singapore, 2012), 2435.
114. **Quantum Gravity and Turbulence** (with V. Jejjala, D. Minic and C. H. Tze), arXiv:1005.3254 [gr-qc], Int. J. Mod. Phys. D19, 2311 (2010).
115. **Cold Dark Matter with MOND Scaling** (with C.M. Ho and D. Minic), arXiv:1005.3537 [hep-th], Phys. Lett. B693, 567 (2010).
116. **Various Facets of Spacetime Foam**, arXiv:1102.4109 [gr-qc], in the Proceedings of the 3rd International Conference on Time and Matter, ed. by M. O’Loughlin et al. (University of Nova Gorica Press, Nova Gorica, Slovenia, 2011) 103-122.
117. **Quantum Gravity and Dark Matter** (with C.M. Ho and D. Minic), 5th place award in the 2011 Essay Competition of the Gravity Research Foundation; arXiv:1105.2916 [gr-qc], Gen. Rel. Grav. 43, 2567 (2011); also Int. J. Mod. Phys. D 20, 1 (2011).

118. **Using Observations of Distant Quasars to Constrain Quantum Gravity** (with E.S. Perlman, D.J.E. Floyd and W.A. Christiansen), arXiv:1110.4986 [astro-ph.CO], *Astronomy & Astrophysics* 535, L9 (2011).
119. **Dark Matter, Infinite Statistics and Quantum Gravity** (with C.M. Ho and D. Minic), arXiv:1201.2365 [hep-th], *Phys. Rev. D* 85, 104033 (2012).
120. **Spacetime Emergence and General Covariance Transmutation** (with C.M. Ho, T.W. Kephart and D. Minic), arXiv:1206.0085 [hep-th], *Mod. Phys. Lett. A* 28,1350005 (2013).
121. **MoNDian Dark Matter, Entropic Gravity, and Infinite Statistics** arXiv:1212.6433 [gr-qc], in the Proceedings of the 13th Marcel Grossman Meeting on General Relativity, ed. R. T. Jantzen et al. (World Scientific, Singapore, 2015), 2192.
122. **Towards a Holographic Theory of Cosmology – Threads in a Tapestry**, arXiv:1305.3918 [gr-qc], *Intl. J. Mod. Phys. D* 22, 1342022 (2013).
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124. **New Constraints on Quantum Gravity from X-Ray and Gamma-Ray Observations** (with E.S. Perlman, S.A. Rappaport, W.A. Christiansen, J. DeVore, and D. Pooley), arXiv:1411.7262, *ApJ*. 805, 10 (2015).
125. **Testing modified dark matter with galaxy clusters: does dark matter know about the cosmological constant?** (with D. Edmonds, D. Farrah, C. M. Ho, D. Minic, and T. Takeuchi), arXiv: 1601.00662, *Int. J. Mod. Phys. A*. 32, 1750108 (2017).
126. **New constraints on quantum foam models from X-ray and gamma-ray observations of distant quasars** (with E. S. Perlman, S. A. Rappaport, W. A. Christiansen, J. DeVore, and D. Pooley), arXiv:1607.08551, in Proceedings of the 14th Marcel Grossmann Meeting, ed. by M. Bianchi et al. (World Scientific, Singapore, 2017), 3935.
127. **Modified Dark Matter** (with D. Edmonds, D. Farrah, D. Minic, T. Takeuchi and C. M. Ho), arXiv: 1602.00055, in Proceedings of the 14th Marcel Grossmann Meeting, ed. by M. Bianchi et al. (World Scientific, Singapore, 2017), 3942.
128. **Holographic Theory of Gravity and Cosmology**, arXiv: 1610.06236, INFN Frascati Physics Series, Vol. 64 (Proc. of the Vulcano Workshop on Frontier Objects in Astrophysics and Particle Physics, 2016), ed. R. Fusco-Femiano et al. (Frascati Roma Italy), pp 49-56.
129. **Quantum Foam, Gravitational Thermodynamics, and the Dark Sector**, arXiv: 1701.00017, *Journal of Physics: Conference Series* 845, 012001 (2017).

130. **Effective Cosmological Constant and Dark Energy**, arXiv: 1706.04287; Bulg. J. Phys. 45, 126 (2018).

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132. **Modified Dark Matter in Galaxies and Galaxy Clusters** (with D. Edmonds, D. Farrah, D. Minic, and T. Takeuchi), arXiv:1801.00160, Bulg. J. Phys. 45, 138 (2018).

133. **Entropy and Gravitation: From Black Hole Computers to Dark Energy and Dark Matter**, arXiv:1910.00040; Entropy 21, 1035 (2019).