

# Arthur Jaffe's Publications

Revised February 2018

- [1] Complex Angular Momentum in Two-Channel Problems, with Y.S. Kim, *Phys. Rev.*, **127** (1962), 2261–2266.
- [2] Asymptotic Behavior of the S Matrix for High Angular Momentum, with Y.S. Kim, *Phys. Rev.*, **129** (1963), 2818–2823.
- [3] Divergence of Perturbation Theory for Bosons, *Commun. Math. Phys.*, **1** (1965), 127–149.
- [4] Entire Functions of the Free Field, *Ann. Phys. (N.Y.)*, **32** (1965), 127–156.
- [5] Nonpositivity of the Energy Density in Quantized Field Theories, with H. Epstein and V. Glaser, *Nuovo Cimento*, **36** (1965), 1016–1022.
- [6] On the Approximation of Quantum Field Theories, *J. Math. Phys.*, **6** (1965), 1172–1178.
- [7] Dynamics of a Cut-off  $\lambda\phi^4$  Field Theory, Princeton University Thesis (1965).
- [8] Existence Theorems for a Cut-off  $\lambda\phi^4$  Field Theory, in *Mathematical Theory of Elementary Particles*, R. Goodman and I. Segal (eds.), MIT Press (1966).
- [9] Local Quantum Fields at Operator-Valued Generalized Functions, in *Conference on Dispersion Theory at MIT*, I.E. Segal (ed.), MIT (1966).
- [10] A Preliminary Study of Infinite Volume Limits in a Cut-off  $\lambda\phi^4$  Field Theory, *Conference on Functional Integration and Constructive Quantum Field Theory*, Editor, I.E. Segal, MIT (1966).
- [11] Wick Polynomials at a Fixed Time, *J. Math. Phys.*, **7** (1966), 1250–1255.
- [12] Form Factors at Large Momentum Transfer, *Phys. Rev. Lett.*, **17** (1966), 661–663.
- [13] High Energy Behavior of Local Quantum Fields, *SLAC PUB 250* (1966), Stanford Linear Accelerator Center.
- [14] A Generalization of the Paley-Wiener-Schwartz Theorem, *SIAM Review*, **15** (1967), 1046–1047.
- [15] High Energy Behavior in Quantum Field Theory. I. Strictly Localizable Fields, *Phys. Rev.*, **158** (1967), 1454–1461.

- [16] A Yukawa Interaction in Infinite Volume, with J. Glimm, *Commun. Math. Phys.*, **11** (1968), 9–18.
- [17] Constructive Quantum Field Theory, with K. Osterwalder, ETH Lectures, Zürich, (1968).
- [18] Infinite Volume Limit of a  $\lambda\phi^4$  Field Theory, with R. T. Powers, *Commun. Math. Phys.*, **7** (1968), 218–221.
- [19] A  $\lambda\phi^4$  Quantum Field Theory without Cut-offs. I, with J. Glimm, *Phys. Rev.*, **176** (1968), 1945–1961.
- [20] A Model of Yukawa Quantum Field Theory, with J. Glimm, *Phys. Rev. Letters*, **23** (1969), 1362–1365.
- [21] Progress in Constructive Field Theory, in *Contemporary Physics, Vol. II* Editor, A. Salam, International Atomic Energy Agency, Vienna (1969).
- [22] Singular Perturbations of Selfadjoint Operators, with J. Glimm, *Comm. Pure and Applied Math.*, **22** (1969), 401–414.
- [23] A General Class of Cut-off Model Field Theories, with O.E. Lanford and A.S. Wightman, *Commun. Math. Phys.*, **15** (1969), 47–68.
- [24] Constructing a  $\lambda(\phi^4)_2$  Quantum Theory, pp. 120–151, in *Local Quantum Theory*, Editor, R. Jost, Academic Press (1969).
- [25] Strictly Localizable Fields, in *Meeting on Renormalization*, Editor, A. Salam, Trieste, (1969).
- [26] Renormalization of Hamiltonians, in *Meeting on Renormalization*, Editor A. Salam, Trieste, (1969).
- [27] Whither Axiomatic Field Theory?, *Reviews of Modern Physics*, **41** (1969), 576–580.
- [28] An Infinite Renormalization of the Hamiltonian is Necessary, with J. Glimm, *Jour. Math. Phys.*, **10** (1969), 2213–2214.
- [29] Model Estimates and Results, in Proc. of the CNRS International Colloquium on Systems with an Infinite Number of Degrees of Freedom, D. Ruelle and L. Michel (eds.), Paris, CNRS, (1970).
- [30] Relativistic Covariance of an Interacting Quantum Field, with John T. Cannon, *Bull. Am. Math. Soc.*, **76** (1970), 853–855.
- [31] Progress in Quantum Field Theory, in *Proceedings of the 1970 Kiev Conference on High Energy Physics*, pp. 618–632, Editor, V. Shelest, Naukova Dumka, Kiev (1971).

- [32] Lorentz Covariance of the  $\lambda(\phi^4)_2$  Quantum Field Theory, with J. Cannon, *Commun. Math. Phys.*, **17** (1970), 261–321.
- [33] Rigorous Quantum Field Theory Models, with J. Glimm, *Bull. Am. Math. Soc.*, **76** (1970), 407–410.
- [34] The  $\lambda(\phi^4)_2$  Quantum Field Theory without Cut-offs: II. The Field Operators and the Approximate Vacuum, with J. Glimm, *Ann. of Math.*, **91** (1970), 362–401.
- [35] Relativistic Covariance of an Interacting Quantum Field, with J. Glimm, *Bull. Am. Math. Soc.*, **76** (1970), 853–357.
- [36] Self-Adjointness of the Yukawa<sub>2</sub> Hamiltonian, with J. Glimm, *Annals of Physics (N.Y.)*, **60** (1970), 321–383.
- [37] The  $\lambda(\phi^4)_2$  Quantum Field Theory without Cut-offs. III. The Physical Vacuum, with J. Glimm, *Acta Math.* **125** (1970), 203–267.
- [38] Energy-Momentum Spectrum and Vacuum Expectation Values in Quantum Field Theory, with J. Glimm, *Jour. Math. Phys.*, **11** (1970), 3335–3338.
- [39] The Energy-Momentum Spectrum and Vacuum Expectation Values in Quantum Field Theory, II. with J. Glimm, *Commun. Math. Phys.* **22** (1971), 1–22.
- [40] Positivity and Self Adjointness of the  $P(\phi)_2$  Hamiltonian, with J. Glimm, *Commun. Math. Phys.*, **22** (1971), 253–258.
- [41] Quantum Field Theory Models, with J. Glimm, in *Statistical Mechanics*, C. DeWitt and R. Stora (eds.) Gordon and Breach Science Publishers, New York (1971).
- [42] The Yukawa<sub>2</sub> Quantum Field Theory without Cut-offs, with J. Glimm, *Jour. Funct. Anal.*, **7** (1971), 323–357.
- [43] Boson Quantum Field Models, with J. Glimm, in *Mathematics of Contemporary Physics*, Editor, R. Streater, Academic Press, 1972.
- [44] The  $\lambda(\phi^4)_2$  Quantum Field Theory without Cut-offs. IV. Perturbations of the Hamiltonian, with J. Glimm, *Jour. Math. Phys.*, **13** (1972), 1568–1584.
- [45] Constructive Field Theory, Phase II, in *Fundamental Interactions in Physics and Astrophysics*, Plenum Press, New York, (1973).
- [46] What is Renormalization?, with J. Glimm, pp. 401–411 in *Partial Differential Equations*, a symposium held at the Univ. California, Berkeley, California 1971, and published as *Proc. Sympos. Pure Math. Vol. XXIII*, American Mathematical Society, Providence, Rhode Island, (1973).

- [47] Positivity of the  $\phi_3^4$  Hamiltonian, with J. Glimm, *Fortschritte der Physik*, **21** (1973), 327–376.
- [48] The Particle Structure of the Weakly Coupled  $P(\phi)_2$  Model and Other Applications of High Temperature Expansions, Part I: Physics of Quantum Field Models, with J. Glimm and T. Spencer, in *Constructive Quantum Field Theory*, Editor, A.S. Wightman, Springer Lecture Notes in Physics Volume 25, (1973).
- [49] The Particle Structure of the Weakly Coupled  $P(\phi)_2$  Model and Other Applications of High Temperature Expansions, Part II: The Cluster Expansion, with J. Glimm and T. Spencer, in *Constructive Quantum Field Theory*, Editor, A.S. Wightman, Springer Lecture Notes in Physics Volume 25, (1973).
- [50] The Particle Search in a Quantum Field Model, with J. Glimm, *Bull. Am. Math. Soc.*, **79** (1973), 979–980.
- [51] The  $n$ -Particle Cluster Expansion for the  $P(\phi)_2$  Quantum Field Model, with J. Glimm, unpublished.
- [52] What Constructive Field Theory Says About Currents, with O. McBryan, in *Local Currents and Their Applications*, Editors, D.H. Sharp and A.S. Wightman, pp. 19–30 (1974), North Holland Publishing Company (1974).
- [53] Status of Constructive Field Theory, in *Proceedings of the 17th International Conference on High Energy Physics*, J.R. Smith (ed.), pages I243–I250 London (1974).
- [54] The Entropy Principle for Vertex Functions in Quantum Field Models, with J. Glimm, *Ann. de l'Inst. Henri Poincaré* **A21** (1974), 1–26.
- [55] Critical Point Dominance in Quantum Field Models, with J. Glimm, *Ann. de l'Inst. Henri Poincaré* **A21** (1974), 27–41.
- [56]  $\phi_2^4$  Quantum Field Model in the Single-Phase Region: Differentiability of the Mass and Bounds on Critical Exponents, with J. Glimm, *Phys. Rev.*, **D10** (1975), 536–539.
- [57] Remark on the Existence of  $\phi_4^4$ , with J. Glimm, *Phys. Rev. Lett.*, **33** (1974), 440–442.
- [58] The Wightman Axioms and Particle Structure in the  $P(\phi)_2$  Quantum Field Model, with J. Glimm and T. Spencer, *Ann. of Math.*, **100** (1974), 585–632.
- [59] Phase Transitions for  $\phi_2^4$  Quantum Fields, with J. Glimm and T. Spencer, *Commun. Math. Phys.*, **45** (1975), 203–216.
- [60] Absolute Bounds on Vertices and Couplings, with J. Glimm, *Ann. de l'Inst. Henri Poincaré* **A22** (1975), 97–107.

- [61] On the Approach to the Critical Point, with J. Glimm, *Ann. de l'Inst. Henri Poincaré*, **A22** (1975), 109–122.
- [62] Two- and Three-Body Equations in Quantum Field Models, with J. Glimm, *Commun. Math. Phys.*, **44** (1975), 293–320.
- [63] Three particle structure of  $\phi^4$  interactions and the scaling limit, with J. Glimm, *Phys. Rev.* **D11** (1975), 2816–2827.
- [64] Particles and Bound States and Progress Toward Unitarity and Scaling, with J. Glimm, in *Mathematical Problems in Theoretical Physics*, H. Araki, (ed.) Springer Lecture Notes in Physics (1976).
- [65] Mathematical Problems Motivated by Quantum Field Theory, in *C\* Algebras and their Applications to Physics*, S. Doplicher, (ed.) Academic Press (1976).
- [66]  $\phi^j$  Bounds in  $P(\phi)_2$  Quantum Field Models, with J. Glimm, in *Mathematical Methods of Quantum Field Theory*, F. Guerra, D. Robinson, and R. Stora (eds.) CNRS (1976).
- [67] Critical Problems in Quantum Fields, with J. Glimm, in *Mathematical Methods of Quantum Field Theory*, Editors, F. Guerra, D. Robinson, and R. Stora, CNRS (1976).
- [68] Existence of Phase Transitions for  $\phi_2^4$  Quantum Fields, with J. Glimm and T. Spencer, in *Mathematical Methods of Quantum Field Theory*, Editors, F. Guerra, D. Robinson, and R. Stora, CNRS (1976).
- [69] Problèmes Ergodiques dans la Théorie Quantique des Champs, *Astérisque*, **40** (1976), 105–112.
- [70] Critical Exponents and Renormalization in the  $\phi^4$  Scaling Limit, with J. Glimm, *Acta Physica Austriaca* **16** (1976), 147–166.
- [71] An Asymptotic Perturbation Expansion for Multiphase  $\phi_2^4$ , with J. Glimm and T. Spencer, *Acta Physica Austriaca*, **16** (1976), 167–175.
- [72] A Convergent Expansion about Mean Field Theory, Part I. The Expansion, with J. Glimm and T. Spencer, *Ann. Phys.* **101** (1976), 610–630.
- [73] A Convergent Expansion about Mean Field Theory, Part II. Convergence of the Expansion, with J. Glimm and T. Spencer, *Ann. Phys.* **101** (1976), 631–669.
- [74] Particles and Scaling for Lattice Fields and Ising Models, with J. Glimm, *Commun. Math. Phys.* **51** (1976), 1–13.
- [75] Phase Transitions in  $P(\phi)_2$  Quantum Fields, with J. Glimm and T. Spencer, *Bull. American Mathematical Society*, **82** (1976), 713–715.

- [76] Critical Exponents and Elementary Particles, with J. Glimm, *Commun. Math. Phys.*, **52** (1977), 203–209.
- [77] Review of “Introduction to Axiomatic Quantum Field Theory” by N.N. Bogolubov, A.A. Logunov, and I.T. Todorov, in *Bull. Amer. Math. Soc.* **83** (1977), 349–351.
- [78] Quark Trapping for Lattice  $U(1)$  Gauge Fields, with J. Glimm, *Physics Letters*, **66B** (1977), 67–69.
- [79] A Tutorial Course in Constructive Field Theory, with J. Glimm, in *New Developments in Quantum Field Theory and Statistical Mechanics*, Editors, M. Lévy, P. Mitter, Plenum Press (1977).
- [80] Functional Integral Methods in Quantum Field Theory, with J. Glimm, in *New Developments in Quantum Field Theory and Statistical Mechanics*, Editors, M. Lévy, P. Mitter, Plenum Press (1977).
- [81] Instantons in an  $U(1)$  Lattice Gauge Theory: A Coulomb Dipole Gas, with J. Glimm, *Commun. Math. Phys.*, **56** (1977), 195–212.
- [82] Lattice Instantons: What Are They and Why Are They Important? in *Mathematical Problems in Physics*, Springer Lecture Notes in Physics, Editors, G.-F. Dell’Antonio, S. Doplicher, and G. Jona-Lasinio (1977).
- [83] Meron Pairs and Quark Confinement, with J. Glimm, *Phys. Rev. Letters*, **40** (1977), 277–278.
- [84] Multiple Meron Solutions of the Classical Yang-Mills Equation, with J. Glimm, *Physics Letters*, **73B** (1978), 167–170.
- [85] Droplet Model for Quark Confinement, with J. Glimm, *Phys. Rev.*, **D18** (1978), 463–467.
- [86] Probability Applied to Physics, with J. Glimm, *Lecture Notes in Mathematics, Volume 2*, University of Arkansas Press, Fayetteville (1978).
- [87] Introduction of Gauge Theories, in *Proceedings of the International Congress of Mathematicians, Helsinki*, Editor, O. Lehto, pp. 905–916 (1978).
- [88] Charges, Vortices and Confinement, with J. Glimm, *Nucl. Phys.* **B149** (1979), 49–60.
- [89] The Resummation of One Particle Lines, with J. Glimm, *Commun. Math. Phys.*, **67** (1979), 267–293.
- [90] A Note on Reflection Positivity, with J. Glimm, *Lett. Math. Phys.*, **3** (1979), 377–378.
- [91] The Coupling Constant in a  $\phi^4$  Field Theory, with J. Glimm, in *Recent Developments in Gauge Theories*, Editors, G. ’t Hooft, C. Itzykson, A. Jaffe, H. Lehmann, P.K. Mitter, I.M. Singer, R. Stora; Plenum Press (1980).

- [92] Classical Gauge Theories and Their Quantum Role, published in *Recent Developments in Gauge Theories*, Editors, G. 't Hooft, C. Itzykson, A. Jaffe, H. Lehmann, P.K. Mitter, I.M. Singer, R. Stora, Plenum Press (1980).
- [93] *Vortices and Monopoles — Structure of Static Gauge Theories*, with C. Taubes, 290 pages Birkhäuser-Boston, Inc., (1980).
- [94] Constructive Field Theory, in *Mathematical Problems of Theoretical Physics*, Editor, K. Osterwalder, Springer Lecture Notes in Physics (1981).
- [95] Renormalization, in *Seminar on Differential Geometry*, S.-T. Yau (ed.) Annals of Mathematics Study **102**, Princeton Press (1981).
- [96] *Quantum Physics*, with J. Glimm, Springer-Verlag, New York, 415 pages (1981).
- [97] Exact Renormalization Group for Gauge Theories, with T. Balaban and J. Imbrie, in *Progress in Gauge Field Theory*, pp. 79–103, Editors, H. Lehmann, G. 't Hooft, A. Jaffe, Plenum Publishing Corporation (1984).
- [98] The Mass Gap for Higgs Models on a Unit Lattice, with T. Balaban, D. Brydges and J. Imbrie, *Annals of Physics* **158** (1984), 281–319.
- [99] Ordering the Universe: the Role of Mathematics, in *Renewing U.S. Mathematics*, National Academy Press (1984). Reprinted in *SIAM Review* **26** (1984), 473–500, and in *Notices of the American Mathematical Society* **31** (1984), 589–608.
- [100] Renormalization of the Higgs Model: Minimizers, Propagators and the Stability of Mean Field Theory, with T. Balaban and J. Imbrie, *Commun. Math. Phys.*, **97** (1985), 299–329.
- [101] Euclidean Quantum Field Theory, *Nucl. Phys.*, **B254** (1985), 31–43.
- [102] Expansions in Statistical Physics, with J. Glimm, *Commun. Pure and Applied Math.*, **68** (1985), 613–630.
- [103] *Collected Papers, Vol. I: Quantum Field Theory and Statistical Mechanics; Expositions*, with J. Glimm, 418 pages, Birkhäuser Boston (1985).
- [104] *Collected Papers, Vol. II: Constructive Quantum Field Theory, Selected Papers*, with J. Glimm, 533 pages, Birkhäuser Boston (1985).
- [105] Constructive Gauge Theory, with T. Balaban, in *Fundamental Problems of Gauge Field Theory*, Editors, G. Velo and A. Wightman, Plenum Press (1986).
- [106] *Quantum Physics*, Second Edition, with J. Glimm, 535 pages, Springer-Verlag (1987).
- [107] Ground State Structure in Supersymmetric Quantum Mechanics, with A. Lesniewski and M. Lewenstein, *Ann. Phys.*, **178** (1987), 313–329.

- [108] Index of a Family of Dirac Operators on Loop Space, with A. Lesniewski and J. Weitsman, *Commun. Math. Phys.*, **112** (1987), 75–88.
- [109] Conversation between Arthur Jaffe and Klaus Peters, *The Mathematical Intelligencer*, **9**, #4 (1987), 11–15.
- [110] The Two-Dimensional, N=2 Wess-Zumino Model on a Cylinder, with A. Lesniewski and J. Weitsman, *Commun. Math. Phys.*, **114** (1988), 147–165.
- [111] Effective Action and Cluster Properties of the Abelian Higgs Model, with T. Balaban and J. Imbrie, *Commun. Math. Phys.*, **114** (1988) 257–315.
- [112] *A Priori* Estimates for the N=2, Wess-Zumino Model on a Cylinder, with A. Lesniewski, *Commun. Math. Phys.*, **114** (1988), 553–575.
- [113] The Loop Space  $S^1 \rightarrow \mathbb{R}$  and Supersymmetric Quantum Fields, with A. Lesniewski, and J. Weitsman, *Annals of Physics*, **183** (1988), 337–351.
- [114] Quantum K-Theory, I. The Chern Character, with A. Lesniewski and K. Osterwalder, *Commun. Math. Phys.*, **118** (1988), 1–14.
- [115] Heat Kernel Regularization and Infinite Dimensional Analysis, in *Mathematical Quantum Field Theory and Related Topics* Canadian Mathematical Proceedings Volume 9, Joel S. Feldman and Lon M. Rosen, Eds., American Mathematical Society: Providence, 1988.
- [116] Mathematics at the Heart of Science, Balomenos Lectures, University of New Hampshire Press, 1988.
- [117] On Convergence of Inverse Functions of Operators, with A. Lesniewski and K. Osterwalder, *Jour. Funct. Anal.* **81** (1988), 320–324.
- [118] Pfaffians on Hilbert Space, with A. Lesniewski and J. Weitsman, *Jour. Funct. Anal.*, **83** (1989), 348–363.
- [119] Supersymmetric Field Theory and Infinite Dimensional Analysis, with A. Lesniewski, in *Nonperturbative Quantum Field Theory*, Proceedings of the 1987 Cargèse Summer School, G. 't Hooft *et. al.*, Editors, Plenum Press 1988.
- [120] Supersymmetry and the Spectral Condition, with A. Lesniewski and C. Wiecekowsk, *Lett. Math. Phys.*, **16** (1988), 385–388.
- [121] Heat Kernel Regularization of Quantum Fields, with A. Lesniewski and C. Wiecekowsk, *Commun. Math. Phys.*, **121** (1989), 337–344.
- [122] *A Priori* Quantum Field Equations, with A. Lesniewski and C. Wiecekowsk, *Annals of Physics*, **192** (1989), 2–20.



- [123] Quantum K-Theory, II. Homotopy Invariance of the Chern Character, with K. Ernst, P. Feng, and A. Lesniewski, *Jour. Funct. Anal.*, **90** (1990), 355–368.
- [124] On Super-KMS Functionals and Entire Cyclic Cohomology, A. Jaffe, A. Lesniewski, and K. Osterwalder, *K-Theory*, **2** (1989), 675–682.
- [125] Deformations of Super-KMS Functionals, with A. Lesniewski and M. Wisniowski, *Commun. Math. Phys.*, **121** (1989), 527–540.
- [126] An Index Theorem for Super Derivations, with A. Lesniewski, *Commun. Math. Phys.*, **125** (1989), 147–152.
- [127] Convergence of an Iterative Neural Network Learning Algorithm for Linearly Dependent Patterns, with Kenneth Berryman, Mario Inghiosa, and Steven Janowsky, *J. Phys. A*, **23** (1990), L223–L228.
- [128] Extending the Pseudoinverse Rule, with Kenneth Berryman, Mario Inghiosa, and Steven Janowsky, in *Neural Networks and Spin Glasses*, edited by K. Theumann and R. Koeberle, World Scientific, Singapore, 1990.
- [129] The Importance of Mathematics, *SUNY Research*, **9**, 4–7 (1989).
- [130] The Heisenberg Algebra on a Riemann Surface, with A. Lesniewski and S. Klimek, *Commun. Math. Phys.*, **126** (1989), 421–431.
- [131] Constructive Field Theory and Entire Cyclic Cohomology, Proceedings of the April 1989 Ringberg Conference, F. Hirzebruch, Editor.
- [132] Ward Identities for Non-Commutative Geometry, with K. Osterwalder, *Commun. Math. Phys.*, **132** (1990), 119–130.
- [133] Geometry of Supersymmetry, with A. Lesniewski, in *Constructive Quantum Field Theory II*, (Erice, 1988), edited by A. Wightman and G. Velo, pp 283–305, NATO Adv. Sci. Inst. Ser. B Physics **234**, Plenum, New York, 1990.
- [134] Mathematics motivated by physics, *Proceedings of Symposia in Pure and Applied Mathematics* **50** (1990), 137–150, American Mathematical Society.
- [135] Asymptotically Commuting Families of Operators, with S. Klimek and A. Lesniewski, *Comment. Math. Helvetici* **65** (1990), 672–679.
- [136] The modular group and super-KMS functionals, with Orlin Stoytchev, in *Differential geometric methods in theoretical physics* (Rapallo, 1990), pp 382–384, Lecture Notes in Physics **375**, Springer, Berlin, 1991.

- [137] Non-Commutative Geometry and Mathematical Physics, in *New Symmetry Principles in Quantum Field Theory*, J. Fröhlich, *et. al.*, Editors, Plenum Press, 1992
- [138] Quantum Physics as Non-Commutative Geometry, in *Mathematical Problems in Theoretical Physics*, A. Uhlmann *et. al.* Editor, pp 281–290, Springer, Berlin, 1992.
- [139] Theoretical Mathematics: toward a cultural synthesis of mathematics and theoretical physics, with Frank Quinn, *Bulletin of the American Mathematical Society*, **29** (1993), 1–13. (Czech Translation by Pavel Exner. *Pokroky Mat. Fyz. Astronom.*, **41** (1996), 25–37.
- [140] Huzihiro Araki, with Alain Connes, Moshé Flato, Heisuke Hironaka, and Vaughan Jones, *Comm. Math. Phys.* **155** (1993), 1–2.
- [141] Stability of a Class of Bi-Local Hamiltonians, with A. Lesniewski and K. Osterwalder, *Commun. Math. Phys.*, **155** (1993), 183–197.
- [142] Round table: physics and mathematics. XIth International Congress of Mathematical Physics (Paris, 1994), 691–705, Internat. Press, Cambridge, MA, 1995.
- [143] University of Rochester Plan to Cut Mathematics Is Recipe for Disaster, with Joseph Lipman, and Morton Lowengrub, *Chronicle of Higher Education*, March 1, 1996, page B1.
- [144] Demotion of Mathematics meets groundswell of protest, with Salah Baouendi and Joseph Lipman, *Notices of the Amer. Math. Soc.*, **43** (1996), 307-313.
- [145] Roland L. Dobrushin, with Joel Lebowitz and Ya. G. Sinai, *Comm. Math. Phys.*, **189** (1997), 259–261.
- [146] Proof and the Evolution of Mathematics, *Synthese*, **111**(1997), 133-146.
- [147] Reflection and Twists, in *Les Relations Entre les Mathématiques et la Physique Théorique*, Festschrift for the 40<sup>th</sup> Anniversary of the IHES, 119–130, September 1998.
- [148] Where does quantum field theory fit into the big picture? in *Conceptual foundations of quantum field theory* (Boston, MA, 1996), A. Cao, Editor, 136–147, Cambridge Univ. Press, Cambridge, 1999.
- [149] Quantum harmonic analysis and geometric invariants, *Advances in Math.* **143** (1999), 1–110.
- [150] Twist positivity, *Ann. Phys.* **278** (1999), 10–61.
- [151] The holonomy expansion, index theory, and approximate super-symmetry, *Ann. Phys.* **279** (2000), 161–262.
- [152] Quantum Invariants, *Comm. Math. Phys.* **209** (2000), 1–12.

- [153] Twist fields, the elliptic genus, and hidden symmetry, *Proc. Nat. Acad. Sci.*, **97** (2000), 1418–1422.
- [154] Twist fields and broken supersymmetry, with Olivier Grandjean, *J. Math. Phys.*, **41** (2000), 3698–3763.
- [155] Constructive quantum field theory, in *Mathematical Physics 2000*, edited by T. Kibble, 111–127, Imp. Coll. Press, London, 2000.
- [156] Twist Positivity for Lagrangian Symmetries, with Olivier Grandjean and Jon Tyson, *Advances in Theoretical and Mathematical Physics*, **4** (2000).
- [157] Equations for Universal Truth, *The Times Higher Educational Supplement*, July 28, 2000, London.
- [158] The elliptic genus and hidden symmetry, *Commun. Math. Phys.*, **219** (2001), 89–124.
- [159] Derivatives with Twists, *Reviews in Mathematical Physics*, **14** (2002), 887–895.
- [160] Interactions between Mathematics and Theoretical Physics, in *New Trends in the History and Philosophy of Mathematics*, Tinne Hoff Kjeldsen and Lise Mariane Jeppesen, editors, University of Odense Press, 2003.
- [161] The Role of Rigorous Proof in Modern Mathematical Thinking, in *New Trends in the History and Philosophy of Mathematics*, Tinne Hoff Kjeldsen and Lise Mariane Jeppesen, editors, University of Odense Press, 2003.
- [162] An Exchange Identity for Non-Linear Fields, with Christian Jäkel, *Comm. Math. Phys.* **264** (2006), 283–289.
- [163] Quantum Yang-Mills Theory, with Edward Witten, in *Millennium Prize Problems*, American Mathematical Society, Providence, RI, 2006, pp 125–152.
- [164] Introduction to Quantum Field Theory, Notes available at <http://www.arthurjaffe.net/Assets/pdf/IntroQFT.pdf>
- [165] The Millennium Grand Challenge in Mathematics, *Notices of the American Mathematical Society*, **53**, no. 6 (2006), 652–660.
- [166] *Mathematical Physics*, Discussion at the Royal Irish Academy, with Michael Atiyah, Michael Berry, Luc Drury, and Arthur Jaffe, moderated by Brendan Goldsmith. Published Dublin, 2007.

- [167] Quantum Field Theory on Curved Backgrounds. I. The Euclidean Functional Integral, with Gordon Ritter, *Comm. Math. Phys.* **270** (2007), 545–572. DOI:10.1007/s00220-006-0166-2
- [168] Lunch with George, *Notices of the American Mathematical Society*, **54**, no. 7 (2007), 833–836.
- [169] Quantum Field Theory on Curved Backgrounds. II. Spacetime Symmetries, with Gordon Ritter, arxiv:0704.0052v1[hep-th].
- [170] Reflection Positivity and Monotonicity, with Gordon Ritter, *Jour. Math. Phys.* **49** (2008), 052301, 1–10. DOI <http://dx.doi.org/10.1063/1.2907660>
- [171] Constructive Jürg, A Personal Overview of Constructive Quantum Field Theory, Lecture at the E.T.H. Zurich on 3 July 2007, posted at <http://www.arthurjaffe.com/Assets/pdf/ETH-Juerg.pdf>
- [172] Quantum Theory and Relativity, in Group Representations, Ergodic Theory, and Mathematical Physics: A Tribute to George W. Mackey, R. S. Doran, C.C. Moore, and R. J. Zimmer, Editors, *Contemporary Mathematics* **449** (2008) 209–245.
- [173] Replica Condensation and Tree Decay, with David Moser, *Reviews in Mathematical Physics* **21** (2009) 439–457. DOI: 10.1142/S0129055X09003657
- [174] James Glimm: Mathematician, Friend, Mentor, with Thomas C. Spencer, *Acta Mathematica Scientia* **30B(2)** (2010), 369–376.
- [175] The Glory of Three, Program Book of the Kartause Ittingen Pfingsten Weekend Festival, 25–28, May 2012.
- [176] Remembering Raoul Bott, *Notices of the American Mathematical Society* **60**, no. 4 (2013), pp 402–404. <http://www.ams.org/notices/201304/rnoti-p398DSb.pdf>
- [177] Arthur Strong Wightman, with Barry Simon, *Bulletin of the International Association of Mathematical Physics*, January 2013, pp 34–36. <http://www.iamp.org/bulletins/old-bulletins/201301.pdf>
- [178] Nine Lessons of my Teacher Arthur Strong Wightman, *Bulletin of the International Association of Mathematical Physics*, April 2013, pp 3–9. <http://www.iamp.org/bulletins/old-bulletins/201304.pdf>
- [179] Quantization Domains, with Ratnarajan Hoole and Christian Jäkel, arXiv:1304.6138v2 [math-ph].

- [180] Vortex Loops and Majoranas, with Stefano Chesi, Daniel Loss, and Fabio L. Pedrocchi, *Jour. Math. Phys.* **54** (2013), 112203. (Featured, cover article.) [doi:10.1063/1.4829273](https://doi.org/10.1063/1.4829273).
- [181] Complex Classical Fields: A Framework for Reflection Positivity, with Christian Jäkel and Roberto E. Martinez II, *Commun. Math. Phys.* **329** (2014), 1–28. [doi:10.1007/s00220-014-2040-y](https://doi.org/10.1007/s00220-014-2040-y).
- [182] Topological Order and Reflection Positivity, with Fabio L. Pedrocchi, *Euro Physics Letters* **105** (2014), 40002. [doi:10.1209/0295-5075/105/40002](https://doi.org/10.1209/0295-5075/105/40002).
- [183] Complex Classical Fields: an Example, *Journal of Functional Analysis* **266** (2014), 1833–1881. [doi:10.1016/j.jfa.2013.08.033](https://doi.org/10.1016/j.jfa.2013.08.033).
- [184] First Encounters, in “In Memory of Arthur Strong Wightman,” Barry Simon, Coordinating Editor, *Notices of the American Mathematical Society*, **62** (2015), 249–257. [doi:10.1090/noti1219](https://doi.org/10.1090/noti1219).
- [185] 50 Years of Communications in Mathematical Physics!, *International Association of Mathematical Physics News Bulletin* July 2015, pp15–26. <http://www.iamp.org/bulletins/Bulletin-July2015-print.pdf>
- [186] Reflection Positivity for Majoranas, with Fabio L. Pedrocchi, *Ann. Henri Poincaré*, **16** (2015), 189–203. [doi:10.1007/s00023-014-0311-y](https://doi.org/10.1007/s00023-014-0311-y).
- [187] Reflection Positivity for Parafermions, with Fabio L. Pedrocchi, arXiv:1406.1384v3 [quant-ph], *Comm. Math. Phys.*, **337** (2015), 455–472. [doi:10.1007/s00220-015-2340-x](https://doi.org/10.1007/s00220-015-2340-x)
- [188] Stochastic PDE, Reflection Positivity, and Quantum Fields, *Journal of Statistical Physics*, **161**, Issue 1 (2015), 1–15. <http://link.springer.com/article/10.1007/s10955-015-1320-z>
- [189] Characterization of Reflection Positivity: Majoranas and Spins, with Bas Janssens, *Commun. Math. Phys.*, **346**(3) (2016), 1021–1050. [doi:10.1007/s00220-015-2545-z](https://doi.org/10.1007/s00220-015-2545-z)
- [190] Planar Para Algebras, Reflection Positivity, with Zhengwei Liu, *Commun. Math. Phys.* **352** (2017), 95–133. <http://arxiv.org/abs/1602.02662>. <http://dx.doi.org/10.1007/s00220-016-2779-4>.
- [191] Qudit Isotopy, with Zhengwei Liu and Alex Wozniakowski, (2016), <http://arxiv.org/abs/1602.02671>.
- [192] Raymond Stora and Les Houches 1970, *Nuclear Physics B*, **912** (2016), 22–24. <https://arxiv.org/abs/1604.08771> <http://dx.doi.org/10.1016/j.nuclphysb.2016.04.041>
- [193] Rudolf Haag, with Henning Rehren, *Physics Today*, **69** (7) (July 2016), 70–71. <http://scitation.aip.org/content/aip/magazine/physicstoday/news/10.1063/PT.5.6210>

- [194] A New Diagrammatic Approach to Quantum Information, with Zhengwei Liu and Alex Wozniakowski, <http://www.arthurjaffe.com/Assets/pdf/New%20Approach.pdf>.
- [195] Multipartite Compressed Teleportation, with Zhengwei Liu and Alex Wozniakowski, (2016). <https://arxiv.org/abs/1605.00321>
- [196] Interview of Arthur Jaffe by Pauline Barrieu, in “Dialogues around Models and Uncertainty,” to be published by World Scientific. <http://arthurjaffe.net/Assets/pdf/Model-Uncertainty%20Barrieu-Jaffe.pdf>
- [197] Roland Sénéor, with A. Abdesselam, Ph. Blanchard, J. Feldman, J. Jona-Lasinio, Ch. Kopper, J. Magnen, and V. Rivasseau, *Bulletin of the IAMP* 10–16, July 2016. <http://www.iamp.org/bulletins/Bulletin-July2016-print.pdf>
- [198] Reflection Positive Doubles, with Bas Janssens, *Jour. Funct. Anal.*, **272** (2017), 3506–3557.
- [199] Holographic Software for Quantum Networks, with Zhengwei Liu and Alex Wozniakowski, [arXiv:1605.00127](https://arxiv.org/abs/1605.00127), *SCIENCE CHINA Mathematics*, **61**(4) (2018), 593–626.
- [200] Constructive Simulation and Topological Design of Protocols, with Zhengwei Liu and Alex Wozniakowski, *New Journal of Physics*, **19** (2017), 063016.
- [201] Quon 3D Language for Quantum Information, with Zhengwei Liu and Alex Wozniakowski, *PNAS*, **114** (2017), 2497–2502.
- [202] Mathematical Picture Language Program, with Zhengwei Liu, *PNAS*, **115** (2018), 81–86.

## In Preparation

- [203] Reflection Positivity Then and Now.
- [204] De Finetti Theorems for Braiding Parafermions, with Kaifeng Bu and Zhengwei Liu.

## Books Edited

- [205] *Recent Developments in Gauge Theories*, with G. 't Hooft, C. Itzykson, H. Lehmann, P.K. Mitter, I.M. Singer, and R. Stora, Plenum Press, New York and London, 1980.
- [206] *Progress in Gauge Field Theory*, with G. 't Hooft, H. Lehmann, P.K. Mitter, I.M. Singer, and R. Stora, Plenum Press, New York and London, 1984.

- [207] *Nonperturbative Quantum Field Theory*, with G. 't Hooft, G. Mack, P.K. Mitter, and R. Stora, Plenum Press, New York and London, 1988.
- [208] *New Symmetry Principles in Quantum Field Theory*, with J. Fröhlich, G. 't Hooft, G. Mack, P.K. Mitter, and R. Stora, Plenum Press, New York and London, 1992.
- [209] *Quantum Fields and Quantum Space Time*, with G. 't Hooft, G. Mack, P.K. Mitter, and R. Stora, Plenum Press, New York and London, 1997.
- [210] *The Millennium Prize Problems*, with J. Carlson and A. Wiles, American Mathematical Society, Providence, 2006.