List of Publications of Yoichiro Nambu

1. On the Relativistic Formulation of the Perturbation Theory [Prog. Theor. Phys. **3** (1948), 444.]
2. The Level Shift and the Anomalous Magnetic Moment of the Electron [Prog. Theor. Phys. **4** (1949), 82.]
3. Second Configuration Space and Third Quantization [Prog. Theor. Phys. **4** (1949), 96.]
4. Effect of the C-Meson Field on the Anomalous Magnetic Moment of the Electron (with Z. Koba and T. Tati) [Prog. Theor. Phys. **4** (1949), 99.]
5. On the Method of Third Quantization. I and II [Prog. Theor. Phys. **4** (1949), 331, 339.]
6. A Note on the Eigenvalue Problems in Crystal Statistics [Prog. Theor. Phys. **5** (1950), 1.]
7. The Use of the Proper Time in Quantum Electrodynamics [Prog. Theor. Phys. **5** (1950), 82.]
8. On the Electromagnetic Properties of Mesons (with T. Kinoshita) [Prog. Theor. Phys. **5** (1950), 307.]
9. Derivation of the Interaction Potential from Field Theory [Prog. Theor. Phys. **5** (1950), 321.]
10. Force Potentials in Quantum Field Theory [Prog. Theor. Phys. **5** (1950), 614.]
11. On the Interaction of Mesons with the Electromagnetic Field. II (with T. Kinoshita) [Prog. Theor. Phys. **5** (1950), 749.]
12. On the Nature of V-Particles. I and II (with K. Nishijima and Y. Yamaguchi) [Prog. Theor. Phys. **6** (1951), 615, 619.]
13. Meson-Nucleon Scattering (with Y. Yamaguchi) [Prog. Theor. Phys. **6** (1951), 1000.]
14. On Lagrangian and Hamiltonian Formalism [Prog. Theor. Phys. **7** (1952), 131.]
15. An Empirical Mass Spectrum of Elementary Particles [Prog. Theor. Phys. **7** (1952), 595.]
16. The Collective Description of Many-Particle System (a generalized theory of Hartree fields) (with T. Kinoshita) [Phys. Rev. **94** (1954), 598.]
17. Structure of the Scattering Matrix [Phys. Rev. **98** (1955), 803.]
18. Structure of Green's Function in Quantum Field Theory. I [Phys. Rev. **100** (1955), 394.]
19. Structure of Green's Function in Quantum Field Theory. II [Phys. Rev. **101** (1956), 459.]
20. Renormalization Constants [Phys. Rev. **101** (1956), 1183.]
21. Application of Dispersion Relations to Low Energy Meson-Nucleon Scattering (with G. F. Chew, M. L. Goldberger and F. E. Low) [Phys. Rev. **106** (1956), 1337.]
22. Relativistic Dispersion Relation Approach to Photomeson Production (with G. F. Chew, M. L. Goldberger and F. E. Low) [Phys. Rev. **106** (1956), 1345.]
23. Possible Existence of a Heavy Neutral Meson [Phys. Rev. **106** (1957), 1366.]

24. Dispersion Relations for Nucleon-Nucleon Scattering (with M. L. Goldberger and R. Oehme) [Ann. of Phys. **2** (1957), 226.]
25. Parametric Representations of General Green's Functions [Nuovo Cim. Series X **6** (1957), 1064.]
26. Dispersion Relations for Form Factors [Nuovo Cim. IX (1958), 610.]
27. Dispersion Theory Treatment of Pion Production in Electron-Nucleon Collisions (with S. Fubini and V. Wataghin) [Phys. Rev. **111** (1958), 329.]
28. Quasi-Particles and Gauge Invariance in the Theory of Superconductivity [Phys. Rev. **117** (1960), 648.]
29. Axial Vector Currents Conservation in Weak Interactions [Phys. Rev. Lett. **4** (1960), 380.]
30. Electroproduction of π-Mesons (with R. Blankenbecler, S. Gartenhous and R. Hugg) [Nuovo Cim. Series X **17** (1960), 775.]
31. Anomalous Thresholds in Dispersion Theory. I (with R. Blankenbecler) [Nuovo Cim. **18** (1960), 595.]
32. Odd $\Lambda\Sigma$ Parity and the Nature of the $\pi\Lambda\Sigma$ Coupling (with J. J. Sakurai) [Phys. Rev. Lett. **6** (1961), 377.]
33. A Dynamical Model of Elementary Particles Based on an Analogy with Superconductivity. I (with G. Jona-Lasinio) [Phys. Rev. **122** (1961), 345.]
34. Dynamical Model of Elementary Particles Based on an Analogy with Superconductivity. II (with G. Jona-Lasinio) [Phys. Rev. **124** (1961), 246.]
35. Possible Bound Σ-Λ System (with D. Lurie) [Nuovo Cim. Series X **21** (1961), 864.]
36. Chirality Conservation with Soft Pion Production (with D. Lurie) [Phys. Rev. **125** (1962), 1429.]
37. Soft Pion Emission Induced by Electromagnetic and Weak Interactions (with E. Shrauner) [Phys. Rev. **128** (1962), 862.]
38. Magnetic Field Dependence of Energy Gap in Superconductors (with San Fu Tuan) [Phys. Rev. **128** (1962), 2622.]
39. Rare Decay Modes of the $\omega(\eta)$ Meson (with J. J. Sakurai) [Phys. Rev. Lett. 8 (1962), 79.]
40. Double Phase Representation of Analytic Functions (with M. Sugawara) [Phys. Rev. **131** (1963), 2335.]
41. High-Energy Behavior of Total Cross-Sections (with M. Sugawara) [Phys. Rev. **132** (1963), 2724.]
42. Magnetic Field and Phase Transition in Thin Film Superconductors (with San Fu Tuan) [Phys. Rev. **11** (1963), 119.]
43. Non-Shrinking Diffraction Scattering (with M. Sugawara) [Phys. Rev. Lett. **10** (1963), 304.]
44. $K^*(725)$ and the Strangeness-Changing Currents of Unitary Symmetry (with J. J. Sakurai) [Phys. Rev. Lett. **11** (1963), 42.]
45. Self-Consistent Models of Strong Interactions with Chiral Symmetry (with P. Pascual) [Nuovo Cim. **30** (1963), 354.]
46. Considerations of the Magnetic Field Problem in Superconducting Thin Films (with San Fu Tuan) [Phys. Rev. **33** (1964), 21.]
47. Axial Vector Mesons (with P. Freund) [Phys. Lett. **12** (1964), 248.]
48. Broken $SU(x)\times SU(3)\times SU(3)\times SU(3)$ Symmetry of Strong Interactions (with P.

Freund) [Phys. Rev. Lett. **12** (1964), 714.]

49. Mass and Coupling Constant Formulas in Broken Symmetry Schemes (with P. Freund) [Phys. Rev. Lett. **13** (1964), 221.]
50. Magnetic Field and Phase Transition in Superconducting Thin Films (with San Fu Tuan) [Rev. Mod. Phys. **36** (1964), 288.]
51. Quasi-Elementary Massless Bosons Associated with the Quantum Electro-Dynamics of Johnson, Baker and Willey [Phys. Lett. **9** (1964), 214.]
52. Outlook of Elementary Particle Physics [*Nature of Matter,* ed. Luke C. L. Huan (Brookhaven National Lab: BNL F88 (T-360) 1964).]
53. A Three-Triplet Model with Double $SU(3)$ Symmetry (with M.-Y. Han) [Phys. Rev. **139B** (1965), 1006.]
54. Dynamical Symmetries and Fundamental Fields [Proceedings of Coral Gables Conference (1965).]
55. Broken $SU(3)\times SU(3)\times SU(3)\times SU(3)$ Symmetry (with P. Freund) [Ann. of Phys. **32** (1965), 201.]
56. Triplets, Static $SU(6)$, and Spontaneously Broken Chiral $SU(3)$ Symmetry [Proceedings of Int. Conf. on Elementary Particles, Kyoto, 1965.]
57. Axial Vector Meson and the Hyperfine Structure of Hydrogen (with S. Fenster and R. Koberle) [Phys. Lett. **19** (1965), 513.]
58. Baryon Structure and Electromagnetic Properties [Prog. Theor. Phys. Suppl. Extra Number (1965), 250.]
59. Electromagnetic Properties of the Baryon (Hyperfine Structure of Hydrogen) [1965 Tokyo Summer Lecture, Part II (1965).]
60. A Systematics of Hadrons in Subnuclear Physics [*Preludes in Theoretical Physics,* ed. A. De-Shalit et al. (North-Holland Publishing Co., Amsterdam), p. 133.]
61. Coupling Constant Relations for $1^{\pm}$ and Induced $0^{\pm}$ Mesons (with J. Cronin) [Nuovo Cim. **41** (1966), 480.]
62. Nonleptonic Decays of K-Mesons (with Y. Hara) [Phys. Rev. Lett. **16** (1966), 875.]
63. Nonleptonic Decays of Hyperons (with Y. Hara and J. Schechter) [Phys. Rev. Lett. **16** (1966), 380.]
64. Relativistic Wave Equations for Particles with Internal Structure and Mass Spectrum [Prog. Theor. Phys. Suppl. Nos. 37 and 38 (1966).]
65. Infinite Multiplets [Proceedings of 1967 Int. Conf. on Particles and Fields, ed. C. R. Hagen et al. (Interscience Pub., New York, 1967), p. 347.]
66. Infinite Component Wave Equations with Hydrogenlike Mass Spectra [Phys. Rev. **160** (1967), 1177.]
67. Magnetic Moments and Charge Radii for States Described by an Infinite Component Wave Equation (with S. P. Rosen) [Prog. Theor. Phys. **40** (1968), 5.]
68. Quantum Electrodynamics in Non-Linear Gauge [Prog. Theor. Phys. **40** (1968), 1151.]
69. Scalar Fields Coupled to the Trace of the Energy Momentum Tensor (with P. Freund) [Phys. Rev. **174** (1968), 1741.]
70. S-Matrix in Semiclassical Approximation [Phys. Lett. **26B** (1968), 10.]
71. Relativistic Groups and Infinite Component Fields [Invited talk at Nobel Symposium on Elementary Particle Theory, Goteborg, May, 1968 (Almquist & Wiksell, Pub. Stockholm, 1968).]

72. Asymptotic Behavior of Partial Widths in the Veneziano Model of Scattering Amplitudes [QUANTA, *A Collection of Scientific Essays dedicated to Gregor Wentzel* (University of Chicago Press, 1970).]
73. Quark Model and the Factorization of the Veneziano Amplitude [Talk presented at International Conf. on Symmetries and Quark Models, Wayne University, 1969 (Gordon & Breach, 1970).]
74. Statistical Approach to the Veneziano Model (with L.-N. Chang and P. Freund) [Phys. Rev. Lett. **24** (1970), 628.]
75. Axial-Vector Form Factor of Nucleon Determined from Threshold Electropion Production (with M. Yoshimura) [Phys. Rev. Lett. **24** (1970), 25.]
76. Symmetry Breakdown and Small Mass Bosons [Fields and Quanta **1** (1970), 33 and *The Past Decade in Particle Theory,* ed. E. C. G. Sudarshan and Y. Ne'eman (Gordon & Breach, 1973), p. 33.]
77. Duality and Hadrodynamics [Notes prepared for Copenhagen High Energy Symposium, Aug. 1970 (unpublished).]
78. Electromagnetic Currents in Dual Hadrodynamics [Phys. Rev. **D4** (1971), 1195.]
79. Gauge Conditions in Dual Resonance Models (with F. Mansouri) [Phys. Lett. **39B** (1972), 375.]
80. Use of Regulator Fields in Dual Resonance Models (with J. Willemsen) [Submitted to XVI International Conference (unpublished).]
81. Chiral Symmetries and Current Algebras [Lecture at International Summer School, Erice, Italy, 1972 (unpublished).]
82. Generalized Hamiltonian Dynamics [Phys. Rev. **D7** (1973), 1304.]
83. Models Concerning the Chemical Structure of Hadrons [Talk presented at Tokyo Symposium on High Energy Physics, July, 1973; Published in Conference Proceedings.]
84. Elementary Particle Physics in Perspective [Butsuri **28** (1973), 452.]
85. Three Triplets, Paraquarks and "Colored" Quarks (with M.-Y. Han) [Phys. Rev. **D10** (1974), 675.]
86. Quarks, Strings and Gauge Fields [Talk given at Johns Hopkins Workshop on Current Problems in High Energy Particle Theory, 1973 EFI 74/04 and Conference Proceedings.]
87. Strings, Monopoles and Gauge Fields [Phys. Rev. **D10** (1974), 4262.]
88. Dynamics of the Zweig-Iizuka Rule and a New Vector Meson Below 2 GeV/c^2 (with P. G. O. Freund) [Phys. Rev. Lett. **34** (1975), 1645.]
89. Magnetic and Electric Confinement of Quarks [Talk given at Topical Conference on Extended Systems, Ecole Normale Supieure, June, 1975; Phys. Rep. **23C** (1976), 250.]
90. Diquark Color Excitation and the Narrow Resonances (with M.-Y. Han) [Phys. Rev. **D14** (1976), 1459.]
91. Strings, Vortices and Gauge Fields [Talk given at Rochester Conference, 1976; *Quark Confinement and Field Theory,* ed. D. R. Strump & D. H. Weingarten (John Wiley & Sons, 1977), p. 1.]
92. Description of Hadronic Structure [Talk given at Erice Workshop, 1976 EFI 76/42 and Conference Proceedings.]
93. Monopoles, Strings and Instantons [Talk given at CCNY Conference, 1977; Annals

of the N. Y. Acad. of Sciences **294** (1977), 74.]
94. Elementary Particles [Butsuri **32** (1977), 11, EFI 77/23.]
95. Stringlike Configurations in the Weinberg-Salam Theory [Nucl. Phys. **B130** (1977), 505.]
96. Some Topological Configurations in Gauge Theories [Int. J. Theor. Phys. **17** (1978), 287-292.]
97. Remarks on the Topology of Gauge Fields [Invited talk given at Orbis Scientiae Conference, January 1978; Published in Conference Proceedings.]
98. Topological Problems in Gauge Theories [Invited talk at UCLA Symposium in honor of Julian Schwinger on the occasion of his 60th birthday; Physica **96A** (1979), 89-98.]
99. QCD and the String Model [Phys. Lett. **80B** (1979), 372.]
100. Concluding Talk [Proceedings of the XIX Int. Conf. on High Energy Physics, Tokyo, 1978, ed. S. Homma et al. (Phys. Soc. of Japan, 1979), p. 971.]
101. Remarks on the Topology of Gauge Fields [*New Frontiers in High Energy Physics,* ed. A. Perlmutter et al. (Plenum Publishing Co., 1978).]
102. Quark Confinement: the Cases for and Against [*To Fulfill a Vision: Jerusalem Einstein Centennial Symposium on Gauge Theories and Unification of Physical Forces,* ed. Y. Ne'eman (Addison & Wesley, N. Y., 1980), p. 118.]
103. Hamilton-Jacobi Formalism for Strings [Phys. Lett. **92B** (1980), 327.]
104. Effective Abelian Gauge Fields [Phys. Lett. **102B** (1981), 149.]
105. Strings and Vortices [VPI Conference on Weak Interactions as Probes of Unification (AIP Conference Proceedings No. 72, Particles and Fields subseries No. 23), p. 633 (1981).]
106. *Quark* (in Japanese) [Kodansha Ltd., Tokyo, 1981.]
107. Many Quark Problem in Two Dimensional Gauge Theory (with B. Bambah) [Phys. Rev. **D26** (1982), 2871.]
108. One-Dimensional Quark Gas (with B. Bambah and M. Gross) [Phys. Rev. **D26** (1982), 2875.]
109. Theory of Strings [Proceedings of the 1981 INS Symposium on Quark and Lepton Physics, Tokyo, Japan, 1981.]
110. Topological Excitations [Proceedings of 1982 Mathematical Seminar, American Mathematical Society.]
111. Concluding Remarks [Proceedings of the Int. Symposium on Gauge Theory and Gravitation, Nara, Japan, 1982.]
112. Monopoles and Related Topics [Proceedings of the Topical Conference on High Energy Physics, Tokyo, 1982, ed. T. Eguchi and Y. Yamaguchi (World Scientific, Singapore, 1983).]
113. Concluding Remarks [Proceedings of the Solvay Conference on Higher Energy Physics, Austin, Texas, November, 1982. Published in Phys. Rep. **104** (1984), 237.]
114. The Activity of the Tomonaga Group up to the Time of the 1947 Shelter Island Conference (with K. Nishijima) [Proceedings of the Shelter Island Conference, June, 1983.]
115. Quantum Mechanics: Prospects and Problems [Talk given at Int. Symposium on Foundations of Quantum Mechanics in Light of New Technology, Tokyo, August, 1983. Proceedings published by Phys. Soc. of Japan, 1984, ed. S. Kamefuchi

et al., p. 363.]

116. Fermion-Boson Relations in BCS Type Theories, *Supersymmetry in Physics* [Proceedings of the Los Alamos Workshop on Supersymmetry in Physics, December, 1983, ed. A. Kostelecký and D. K. Campbell (North-Holland, Amsterdam, 1985) also published as Physica **15D** (1985), 147.]
117. Superconductivity and Particle Physics [Invited paper for Int. Conf. on Low Temperature Physics, Karlsruhe, West-Germany, August, 1984; Physica **126B** (1984), 328.]
118. The Turbulent Aether [*Symmetries in Particle Physics,* Symposium in Honor of F. Gürsey's 60th Birthday, Symmetries in Particle Physics, ed. Itzhak Bars, Alan Chodos and Chia-hsiung Tze (Plenum Publishing Corp., 1984).]
119. Fermions Living in a Space of Lie Groups [Contributed paper to the Yuval Ne′eman Festschrift, to be published by Cambridge University Press (1984).]
120. Field Theory of Galois Fields [Contributed paper to the E. S. Fradkin Festschrift. EFI 85/52.]
121. Some Theoretical Problems in Particle Physics [Phys. Bl. **41** (1985), 173.]
122. Directions of Particle Physics [Invited talk at the Kyoto International Symposium: The Jubilee of the Meson Theory (Aug. 1985), to be published in the Proceedings; EFI 85-71, Prog. Theor. Phys. Suppl. No.85 (1985), 104.]
123. Gauge Principles, Vector Meson Dominance and Spontaneous Symmetry Breaking [Int. Symposium on Particle Physics in the 1950's, FNAL, May, 1985.]
124. Summary of Personal Recollections of Tokyo Group [Proceedings of the Japan-US Collaboration-Workshops on the History of Particle Theory in Japan, 1935 -1960; Lake Yamanaka, Japan, August, 1985 (to be published).]
125. Supersymmetry and Superconductivity [Contribution to a Festschrift dedicated to Gyo Takeda, EFI 85-86.]