

Professor Virendra Singh
List of Publications
(arranged subjectwise)

Elementary Particles and High Energy Physics:

1. On the Interaction Hamiltonian of Symmetric Pseudoscalar Meson Theory
Nuovo Cimeno 11, 800-804 (1959).
2. Theory of $\pi - N$ Scattering in the Strip Approximation to the Mandelstam Representation
(with B.M. Udgaonkar)
Phys. Rev. 123, 1487-1495 (1961).
3. Self Consistent Model for Non-Leptonic Decays of lambda and sigma Hyperons
(with B.M. Udgaonkar)
Phys. Rev. 126, 2248-2251 (1962).
4. Analyticity in the Complex Angular Momentum Plane of the Coulomb Scattering Amplitude
Phys. Rev. 127, 632-636 (1962)
Reprinted in
 - (i) E.J. Squires, Complex Angular Momenta and Particle Physics, (W.A. Benjamin, Inc., New York, 1963)
 - (ii) Series of Selected Papers in Physics (147), Edited by R. Kubo (Physical Society of Japan, Tokyo).
5. Vector Charge and Magnetic Moment Form Factors of Nucleon
(with B.M. Udgaonkar)
Phys. Rev. 128, 1820-2822 (1962).
6. Regge Poles and Asymptotic Behaviour in the Analytic Continuation of the Pion Nucleon Scattering Amplitude (Ph.D. Thesis)
UCRL-10254 (1962).
7. Regge Poles in πN Scattering and in $\pi + \pi \rightarrow N + \bar{N}$.
Phys. Rev. 129, 1889-1896 (1963).

8. Theory of the $J = 3/2, I = 3/2 \pi N$ Resonance
(with B.M. Udgaonkar)
Phys. Rev. 130, 1177-1179 (1963).
9. Regge Poles and Complex Singularities
(with J.M. Cornwall and K.T. Mahanthappa)
Phys. Rev. 131, 1882-1888 (1963).
10. Leptonic Hyperon Decays and Unitary Symmetry
(with J.M. Cornwall)
Phys. Rev. Letters 10, 551-553 (1963).
11. Elementary Particles of Conventional Field Theory as Regge Poles. IV
(with M. Gell-Mann, M.L. Goldberger, F.E. Low and F. Zachariasen)
Phys. Rev. 133, B161-B174 (1964).
12. Generalization of the Reciprocal Bootstrap Mechanism between Nucleon and $(3, 3) \pi - N$ isobar to the SU(3) Octet Symmetry Model
Nuovo Cimeno 33, 763-768 (1964).
13. Sum Rules for the Decay of the Baryon Decuplet into the Baryon and Meson Octets in Broken SU(3) Symmetry
(with V. Gupta)
Phys. Rev. 135, B1442-1444 (1964),
14. Sum Rules for Coupling Constants in Broken SU(3) Symmetry
(with V. Gupta)
Phys. Rev. 136, B782-786 (1964).
15. Splittings of Spin-Unitary Spin Supermultiplets
(with M.A.B. Bég)
Phys. Rev. Letters 13, 418-421 (1964) and 13, (E) (1964).
16. Splitting of 70-plet of SU(6)
(with M.A.B. Bég)
Phys. Rev. Letters 13, 509-511 (1964).
17. Electromagnetic level shifts for Baryons in SU(6) Symmetry
(TIFR Report 1964).

18. Reciprocal Bootstrap Possibilities for Baryons
(with L.A.P. Balázs and B.M. Udgaonkar)
Phys. Rev. 139, B1313-B1318 (1965).
19. Baryon Bootstrap Possibilities in SU(6)
(with B.M. Udgaonkar)
Phys. Rev. 139, B1585-1587 (1965).
20. SU(9) Symmetry of Baryon and Mesons
Phys. Rev. Letters 15, 271-274 (1965).
21. Internal Symmetries and Finite Groups
(with S.K. Bose)
(TIFR Report 1965).
22. SU(n) Crossing Matrices for Baryon-Meson Scattering
(with H.S. Mani, G. Mohan and L.K. Pande)
Annals of Physics 36, 285-307 (1966).
23. Lie Group of the Strong-Coupling Theory I. Calculations of the Coupling-Constant Ratios and Magnetic Moments for Symmetric Pseudoscalar-Meson Theory
Phys. Rev. 144, 1275-1279 (1966).
24. Lie Group of the Strong Coupling Theory II. Equivalence with Static Bootstrap Theory and Application to Pion-Hyperon Scattering
(with B.M. Udgaonkar)
Phys. Rev. 149, 1164-1171 (1966).
25. Bootstrap and Symmetries.
Proceedings of the 9th Symposium on Cosmic Rays, Elementary Particle Physics and Astrophysics 1965, 459-477 (1966).
26. Lectures on Unitary Symmetry and its Application to Particle Physics.
Delivered at University of Delhi, Delhi (Delhi University Report 1966).
27. Strong Coupling Theory of Chew-Low Model (TIFR Report, 1966).
28. Lie Group of the Strong Coupling Theory III. Dynamical Generation of Extra Internal Symmetry for a Class of Representations
(with P. Babu and A. Rangwala)
Phys. Rev. 157, 1322-1326 (1967).

29. Fubini Sum Rule and Analyticity in Angular Momentum Plane
Phys. Rev. Letters 18, 36-39 (300 [E]) (1967).
30. New Low Energy Theorem for Compton Scattering
Phys. Rev. Letters 19, 730-734, (1967).
31. Multiplet Structure and Mass Sum Rules in the SU(6) Symmetry Scheme.
Symposia on Theoretical Physics, Vol. 4, 23-33. Edited by A. Ramakrishnan (Plenum Press, New York, 1967).
32. Low Energy Theorems for Compton Scattering giving higher order terms in frequency.
Proceedings of the 1967 International Conference on Particles and Fields, Rochester. Edited by C.R. Hagen, G. Guralnik and V.S. Mathur, 462-468 (Interscience Publishers, New York, 1967).
33. New Low Energy Theorems for Nucleon Compton Scattering
Phys. Rev. 165, 1532-1534 (1968).
34. Low Energy Theorems to Fourth Order in e for Compton Scattering
(with S.M. Roy)
Phys. Rev. Letters 21, 861-864 (1968).
35. Particle Physics - A Survey.
Proceedings of the 10th DAE Symposium on Cosmic Ray, Elementary Particle Physics and Astrophysics 1967 (1968).
36. (book review) Advances in Particle Physics
Vol.2 Editors: R.L. Cool and R.E. Marshak (Interscience Publishers, John Wiley & Sons, New York, 1968, xii+734pp, \$24.95.
Indian Journal of Physics, 43, 365 (1969)
37. Upper bounds on the elastic differential crosssection
(with S.M. Roy)
Annals of Physics 57, 461-480 (1970).
38. Unitarity upper bound on the Absorptive Part of Elastic Scattering Amplitude
(with S.M. Roy)
Phys. Rev. Letters 24, 28-33 (1970).

39. Unitarity Upper and Lower Bounds on the Absorptive Parts of Elastic Scattering Amplitudes
(with S.M. Roy)
Phys. Rev. D1. 2638-2651 (1970).
40. Upper Bounds on Particle-Antiparticle Total Cross-Section Differences at High Energies
(with S.M. Roy)
Phys. Letters 32B, 50-54(1970).
41. High Energy Bounds on Scattering Amplitudes and Oscillations in the Diffraction Peak Region
Phys. Rev. Letters 26, 530-534 (1971).
42. Exact Results in the Analytic S-Matrix Theory of Strong Interactions for High Energies:
 - (i) Field and Quanta, 1, 151-170 (1971)
 - (ii) 'The Past Decade in Particle Theory'. Edited by E.C.G. Sudarshan and Y. Ne'eman, 161-170 (Gordan and Breach, London, 1973).
43. Asymptotic Bounds on the Absorptive Parts of the Elastic Scattering Amplitudes
(with A.S. Vengurlekar)
Phys. Rev. D5, 2310-2315 (1972).
44. Validity of Scaling-Relations between Nucleon Form-Factors
Phys. Rev. Letters 28, 859-862 (1972).
45. Low Momentum-transfer Theorems e^\mp (or μ^\mp) - Charged Hadron Scattering and New Tests of Quantum Electrodynamics
(with S.M. Roy)
BNL, 16992 (June 1972)
46. Fluctuation Theorem for the Feynman Fluid Model of Inclusive Reactions
(with V. Gupta)
Letters al. Nuovo Cimento 7, 755-778 (1973).

47. Exact Results in the Analytic S-Matrix Theory.
Proceedings of the 1st Symposium on High Energy Physics, IIT-Powai,
Bombay (Dec. 12-16, 1972), 269-291 (1973).
48. Do we have increasing Total Crosssections at High Energies?
Physics News, 4, 19 (1973).
49. Advances in High Energy Physics, Vol.1
Editors: S.M. Roy and Virendra Singh
Tata Institute of Fundamental Research, Bombay (Proceedings, Dal-
housie, June 1973).
50. Advances in High Energy Physics, Vol.2
Editors: S.M. Roy and Virendra Singh
Tata Institute of Fundamental Research, Bombay (Proceedings, Dal-
housie, June 1973).
51. ψ -Particles, SU4 and Anomalous Currents
(with T. Das, P.P. Divakaran and L.K. Pandit)
Phys. Rev. Letters 34, 770-773 (1975).
52. The ψ -Particles in an SU4 Scheme with Anomalous Currents
(with T. Das, P.P. Divakaran and L.K. Pandit)
Pramāna 4, 105-129 (1975).
53. Bounds on Elastic Absorptive Parts
Annals of Physics, 92, 377-394 (1975).
54. Universal Theory of Weak Interactions in the Paracharge Scheme and
Quark-Lepton Analogy
(with T. Das, P.P. Divakaran and L.K. Pandit)
Pramana 5, 85-100 (1975).
55. Rigorous Sum Rules and Bounds on Pion-Pion Scattering Lengths
(with S.M. Roy)
Physics Letters, 60B, 67-70 (1975).
56. Rigorous Sum Rules and Bounds on Pion-Pion Scattering Amplitudes
with Positivity
(with S.M. Roy)
Nucl. Phys. B107, 155-178 (1976).

57. Approaches to High Energy Physics.
Physics News 7, 78-87 (1976).
58. "Nuclear and Particle Physics – Part A : Background and Symmetries
by H. Frauenfelder and D.M. Henley,
W.A. Benjamin Inc. Reading, Massachusetts, 1975, xviii+573pp, \$21.50
(cloth), #13.50 (paper).
Current Science 45, 237-238 (1976).
59. Paracharge Phenomenology: Systematics of the New Hadrons
(with T. Das, P.P. Divakaran and L.K. Pandit)
Pramana 7, 113-125 (1976).
60. A Lower Bound on the Pionic Contribution to the Muon Magnetic
Moment
(with A.K. Raina)
Journal of Physics G (Nuclear Phys.) 3, 315-320 (1977).
61. Unitarity Bounds on Elastic Absorptive Amplitudes involving total
Cross Sections, Slope and Curvature Parameters
(with A.K. Raina)
Physics Letters 67B, 327-329 (1977).
62. Exact Results in Strong Interactions Dynamics.
Proceedings of the 3rd High Energy Physics Symposium, Bhubaneswar,
Orissa (Nov.1-5, 1976), Vol.II, 235-261 (1977).
63. Advances in High Energy Physics, Vol.3
Editors: Virendra Gupta and Virendra Singh
Tata Institute of Fundamental Research, Bombay (1979) (Proceedings,
Panchgani, December 1977).
64. Exact Solutions of a Meiman Problem with an Application to the Pionic
Contribution to the Muon Magnetic Moment
(with A.K. Raina)
Nucl. Phys. B139, 341-364 (1978).

65. High Energy Theorems on Diffraction Scattering of Hadrons.
 Proceedings of the International Conference and Winter School on
 Frontiers of Theoretical Physics. Edited by F.C. Auluck, L.S. Kothari
 and V.S. Nanda (The MacMillan Co. of India Ltd., Delhi), 97-106
 (1978).
66. Unitarity Restrictions of Meson-Nucleon Helicity-Flip Amplitude and
 Slope of the Diffraction Peak
 (with G. Mennessier and S.M. Roy)
 Nuovo Cimento 50A, 443-445 (1979).
67. Unitarity Bounds on Elastic Absorptive Amplitudes Involving Total
 Cross-Section, Slope and Curvature Parameter II
 (with A.K. Raina)
 Journal of Physics G. Nuclear Physics 5, 1019-1031 (1979).
68. Bounds on Form Factors and Propagators
 (Notes by A.K. Raina of lectures given by V. Singh at Winter School
 of High Energy Physics, Panchgani (December 12-31, 1977).
 Fortschritte der Physik, 27, 561-579 (1979).
69. Basic Forces of Nature and their Unification
 Science Today, Vol.14, No.1, 19-23 (January 1980).
70. Towards a Grand Unification
 Science Today, Vol.14, No.3, 43-51 (March 1980).
71. An Estimate of the Mass of Antineutrino of Electron Type from Tritium
 Beta Decay
 Physics News, 11, 93 (1980).
72. (book review) Elementary Particle Physics : An Introduction
 By D.C. Cheng and G.K. O'Neill (Addison-Wesley Publishing Co.,
 Reading, Massachusetts 1979), pp.viii+443, \$29.50
 Current Science 49, 607 (1980).
73. Factorisation Limit on Photon-Photon Cross-section
 (with K.V.L. Sarma)
 Phys. Letters 101B, 201-203 (1981).

74. Effective Baryon-Lepton Coupling and the Proton Decay Modes
(with K.V.L. Sarma)
Phys. Letters 107B, 191-195 (1981).
75. Fractionally Charged Atomic Systems and the Stanford Quark Search Experiments
(with V. Gupta)
Phys. Letters 112B, 251-254 (1982).
76. On $n \rightarrow p + e + \nu_e$
(with V. Gupta and S. Pakvasa)
Phy. Letters 118B, 352-354 (1982).
77. Effective Baryon-Lepton Coupling approach for the proton decay.
International Colloquium on Baryon Non-Conservation - ICOBAN, 1982. Edited by V.S. Narasimham, Pramana Supplement. Published by The Indian Academy of Sciences, Bangalore, 1982.
78. H. Yukawa
Patrika, June 1982.
79. (book review) Neutrino Physics and Astrophysics
Editor: E. Fiorini (Plenum Press, New York and London, 1982) pp.xii+421.
Journal of Scientific and Industrial Research, Delhi, 41, 636-637 (1982).
80. Helicity Conservation and Absence of Bound States of Fermion Monopole System
(with A.P. Balachandran and S.M. Roy)
Phys. Rev. D28, 2669-2672 (1983).
81. Grand Unification and the Big-Bang Cosmology
Fortschritte der Physik, 31, 569-590, (1983).
82. A Glimpse of the Weak Vector Boson and a Hint of the Top Quark
(with D.P. Roy)
Physics News, 14, 56-58 (1983).
83. (book review) The New Aspects of Subnuclear Physics
Editor: A. Zichichi (Plenum Press, New York and London, 1980) \$75.00
Physics News 14, 45 (1983).

84. (book review) Annual Review of Nuclear and Particle Science, Vol.32 (1982).
 Editors: J.D. Jackson, H.E. Gove, R.F. Schwitters (Annual Review Inc., Palo Alto, California, 1982).
 Current Science, 52, 895 (1983).
85. Contribution to General Discussion at XVIII Solvay Conference on High Energy Physics, Univ. of Texas at Austin (November 1982)
 Phys. Reports, 104, 226-227 (1984).
86. Supersymmetry and Sypergravity, Nonperturbative QCD:
 Proceedings, Mahabaleshwar, India, 1984
 Editors: Probir Roy and Virendra Singh
 Lecture Notes in Physics No.208, Springer-Verlag, Berlin, Heidelberg (1984).
87. (book review) Annual Review of Nuclear and Particle Science, Vol.33 (1983).
 Editors: J.D. Jackson, H.E. Gove, R.F. Schwitters (Annual Review Inc., Palo Alto, California) pp.viii+706.
 Current Science, 53, 1054-1055 (1984).
88. Fractionally Charged Non-leaking Dyons and Fermions in a Bag
 (with S.M. Roy)
 Pramana 24, 611-618 (1985).
89. Bosonic String Theories with New Boundary Conditions
 (with S.M. Roy)
 Pramana 26, L85-91 (1985).
90. H.J. Bhabha : His contribution to Theoretical Physics
 In Homi Jehangir Bhabha: Collected Scientific Papers. Editors: B.V. Sreekantan, Virendra Singh and B.M. Udgaonkar, p.xxii-xivii.
 Tata Institute of Fundamental Research, Bombay (1985).
 Reprinted (with slight abridgement) in Link, 29, #20, 39-48 (December 21, 1986).

91. Exactly Soluble Problems in Condensed Matter and Relativistic Field Theory:
 Proceedings, Panchgani, India (1985)
 Editors: B.S. Shastry, S.S. Jha and V. Singh
 Springer-Verlag, Berlin, Heidelberg (1986).
92. Quantisation of Nambu-Goto Strings with New Boundary Conditions
 (with S.M. Roy)
 Phys. Rev. D33, 3792-3795 (1986).
93. Rise and fall of the Baryon Number
 In 'Cosmic Pathways'. Essays written in honour of Prof. B.V. Sreekantan on his 60th birthday. Edited by R. Cowsik, p.3-10 (Tata McGraw-Hill Publishing Co. Ltd., New Delhi, 1986).
94. The Quasi-Open String
 (with S.M. Roy)
 Phys. Rev. D35, 1939-1942 (1987).
95. Low Momentum-Transfer Theorems for e^\pm (or μ^\pm) Charged Hadron Scattering and New Tests of Quantum Electrodynamics
 (with S.M. Roy)
 Indian J. Phys. 61B (1987) (S.N. Biswas Festschrift Issue) = #48
96. Interacting Quasi-Open Strings
 (with S.M. Roy)
 Phys. Rev. D36, 1827-1829 (1987).
97. String Theories with New Boundary Conditions
 (with S.M. Roy), in
 - (i) Strings, Lattice Gauge Theory, High Energy Phenomenology, Edited by V. Singh and S.R. Wadia, World Scientific, Singapore (1987), p. 220-233;
 - (ii) Proceedings of the 2nd Asia-Pacific Physics Conference, Bangalore 1986, Edited by S. Chandrasekhar, Vol.1, p.380-393, World Scientific, Singapore (1987).

98. Strings with New Boundary Conditions and New Dual Amplitudes
(with S.M. Roy), in
International Workshop on Superstrings, Cosmology, Composite Structures, Edited by S.J. Gates Jr. and R.N. Mohapatra, p.135-146, World Scientific, Singapore (1987).
99. Strings Lattice Gauge Theory, High Energy Phenomenology
Editors: V. Singh and S.R. Wadia
World Scientific, Singapore (1987).
100. Ramond-Neveu-Schwarz String with New Boundary Conditions
(with S.M. Roy)
Phys. Letters 214B, 182-186 (1988).
101. Quasi-open and Quasi-closed Strings
(with S.M. Roy), in
DST Workshop on Particle Physics – Super String Theory, Editors:
H.S. Mani and R. Ramachandra, p.219-236, World Scientific, Singapore
(1988).
102. High Energy Theorems
(with S.M. Roy), in
Rigorous Methods in Particle Physics (Andre Martin Festschrift) Editors:
S. Ciulli, F. Schech and W. Thirring, Springer Tracts in Modern
Physics, Vol.119, p.38-52 (1990); Springer-Verlag, Berlin, etc.
103. Baryon-Anti-Baryon Asymmetry in the Universe,
MAEER's MIT Pune Journal, 1, #2, 28-32 (May-July 1992).
104. Magnetic Monopoles
Indian Journal of Physics 67 (Spl.) 45-57 (1993) [Commemoration
volume on Professor Meghnad Saha (1893-1956)].
105. Particles and Fields
Chapter 8 in Physics in India: A Status Report 1994, Editor: S.S. Jha,
Indian National Science Academy, New Delhi, p.82-89 (1994).
106. (book review)
Lee Smolin, "The Trouble with Physics: The Rise of String Theory,
The Fall of Science and What Comes Next", Allen Lane, an imprint of

Penguin, London (2007) in
Current Science 95, 401 (2008).

107. Bhabha's Contribution to Elementary Particle Physics and Cosmic Ray Research,
(i) Physics News 39, #1 (Bhabha Centenary issue), 24-33 (Jan. 2009),
Reprinted in
(ii) Resonance 14, #5, 430-454 (May 2009)
(iii) "Tribute to a Titan: Birth Centenary of Homi Jehangir Bhabha",
ed. by D.K. Ghosh and A.K. Grover,
Indian Physics Association, Mumbai (2009) p. 19-36.
Also available at
(iv) arXive: 0905.2264 (May 2009).
108. Chandrasekhara Venkata Raman (1888-1970), in "The Great Scientists" ed. Andrew Robinson, Thames and Hudson Ltd., London.

Quantum Physics Applications:

(except to elementary particles and high energy physics)

1. Ground-State Energy of Boson Gas
Phys. Rev. 116, 507-510 (1959).
2. The Anharmonic Oscillator and the Analytic Theory of Continued Fractions
(with S.N. Biswas and K. Datta)
Phys. Rev. D18, 1901-1908 (1978).
3. Analytic Continued Fraction Theory for a Class of Confinement Potentials
(with S.N. Biswas and K. Datta)
Letters in Mathematical Physics 3, 73-81 (1979).
4. A Class of Exact Solutions for Doubly Anharmonic Oscillators
(with Anita Rampal, S.N. Biswas and K. Datta)
Letters in Mathematical Physics 4, 131-134 (1980).
5. Higher Order JWKB Expressions for the Energy Level and the Wave function at the Origin
(with J. Pasupathy)
Z. Phys. C. - Particles and Fields 10, 23-27 (1981).
6. Schrödinger Lumps
(with S.M. Roy)
Journal of Physics A. 14, 2927-2941 (1981).
7. Continued Fraction Theory of the Rotating Harmonic Oscillator
(with S.N. Biswas and K. Datta)
J. Math. Phys. 23, 1323-1326 (1982).
8. Generalised Coherent States and the Uncertainty Principle
(with S.M. Roy)
Phys. Rev. D25, 3413-3416 (1982).
9. Exact solution of Schrödinger Equation in Aharonov-Bohm plus Dirac-Monopole Potential
(with S.M. Roy)
Phys. Rev. Letters 51, 2069-2072 (1983).

10. Time Dependent Aharonov-Bohm Hamiltonian and Admissibility Criteria of Quantum Wave Functions
(with S.M. Roy)
Nuovo Cimento, 79A, 391-409 (1984).
11. Soliton and Boundary Condition Induced Fractional Fermion Number
(with S.M. Roy)
Pramana 23, 332-342 (1984).
12. Fractional Total-Charge Eigenvalue for a Fermion in a Finite One Dimensional Box
(with S.M. Roy)
Phys. Letters 143B, 179-182 (1984).
13. Soliton and Boundary Condition Induced Fractional Fermion Number
(with S.M. Roy)
Pramana 23, 332-342 (1984).
14. Fractional Total-Charge Eigenvalue for a Fermion in a Finite One Dimensional Box
(with S.M. Roy)
Phys. Letters 143B, 179-182 (1984).
15. Conformally Invariant Field Theories in Two Dimensions and Corresponding Statistical Mechanical Models
(with B.S. Shastri)
Pramana, 25 519-524 (1985).
16. Exactly Soluble Problems in Condensed Matter and Relativistic Field Theory:
Proceedings, Panchgani, India (1985)
Editors: B.S. Shastri, S.S. Jha and V. Singh
Springer-Verlag, Berlin, Heidelberg (1986).
17. Proceedings of the Second Asia-Pacific Physics Conference, Bangalore 1986 Vol.1-2
Editor: S. Chandrasekhar, Editorial Committee: S. Chandrasekhar (Chairman), C.K. Majumdar, A.N. Mitra, E.S. Rajagopal, T.V. Ramakrishnan, V. Singh and R. Shashidhar
World Scientific, Singapore (1987).

18. Schrödinger Centenary Surveys in Physics
Proceedings of the Refresher Course in Theoretical Physics, November
11-19, 1987,
Indore, India, pp.xii+300
Editors: Virendra Singh and Siddheshwar Lal
World Scientific, Singapore (1988).
19. An Aharonov-Bohm like Effect for Simply Connected Regions arising
due to Boundary Conditions
(with S.M. Roy)
Jour. Phys. A (Maths and Gen.) 22, L425-430 (1989).
20. The “Herbst Hamiltonian” and the mass of boson stars
(with J.C. Raynal, S.M. Roy, A. Martin and J. Stubbe)
Phys. Letters B, 320, 105-109 (1994).
21. Quantum Statistics of Particles
 - (i) Physics News 25, #1, 3-12 (March 1994);
 - (ii) ASAPAP (Association of Asia-Pacific Physical Societies) Bul-
letin 4, #2, 13-18 (June 1994).
22. (book review) Supersymmetry in Quantum Mechanics
by Fred Cooper, Avinash Khare and Uday Sukhatme,
(World Scientific, Singapore. 2001, 210pp, \$58),
Current Science 84, #5, 716 (2003).

Foundations of Quantum Theory:

1. Experimental Tests of Quantum Mechanics Versus Local Hidden Variable Theories
(with S.M. Roy)
Journal of Physics A: Mathematical and General 11, L167-172 (1978).
2. Completeness of Tests of Local Hidden Variable Theories
(with S.M. Roy)
Journal of Physics A: Mathematical and General 12, 1003-1009 (1979).
3. Foundations of Quantum Mechanics
(invited review presented at Einstein Centenary Symposium, Ahmedabad (1979)
In 'Gravitation, Quanta and Universe' Edited by A.R. Prasanna et.al.
(Wiley Eastern, New Delhi 1980) 230-238.
Reprinted in
Niels Bohr - A Profile. Edited by A.N. Mitra, L.S. Kothari, V. Singh and S.K. Trehan,
Indian National Science Academy, Delhi (1985).
4. Quantum Physics: Some Fundamental Aspects, in
Schrödinger Centenary Surveys in Physics, Editors: Virendra Singh and Siddheshwar Lal, p.11-35, World Scientific, Singapore (1988).
5. Hidden Variable Theories without Non-local Signalling and their Experimental Tests
(with S.M. Roy)
Phys. Letters A, 139, 437-441 (1989).
6. Generalised Beable Quantum Field Theory
(with S.M. Roy)
Phys. Letters B234, 117-120 (1990).
7. Tests of signal locality and Einstein-Bell locality for multiparticle systems
(with S.M. Roy)
Phys. Rev. Letters 67, 2761-2764 (1991).

8. Theories with Signal-Locality and their Experimental Tests
(with S.M. Roy), in
M.A.B. Bég Memorial Volume, Editors: A. Ali and P. Hoodbhoy, p.149-158, World Scientific, Singapore (1991).
9. Quantum violation of stochastic noncontextual hidden variable theories
(with S.M. Roy)
Phys. Rev. A48, 3379-3382 (1993).
10. Experimental Consequences of Stochastic Noncontextual hidden variable theories
(with S.M. Roy)
Vistas in Astronomy 37,317-320 (1993).
11. Einstein-Podolsky-Rosen Correlations
In Recent Developments in Quantum Optics, Edited by R. Inguwa, p.37-42, Plenum Press, New York (1993).
12. Causal Quantum Mechanics treating Position and Momentum Symmetrically
(with S.M. Roy)
Mod. Phys. Letters A, 10, 709-716 (1995).
13. Deterministic Quantum Mechanics in One Dimension
(with S.M. Roy)
 - (i) Proceedings of the International Colloquium on Modern Quantum Field Theory II, Editors: S.R. Das, G. Mandal, S. Mukhi and S.R. Wadia, p.249-255, World Scientific, Singapore (1995).
 - (ii) International Conference on Non-Accelerator Particle Physics, Editor: R. Cowsik; pp434-442, World Scientific, Singapore (1995).
14. Causal Quantum Mechanics
 - (i) Indian Journal of Physics, 71 (Spl) 355-368 (1997).
 - (ii) Pramana, journal of physics 49, 5-16 (1997).
Special issue on Conference on Fundamentals of Physics and Astrophysics.

15. Causal Quantum Mechanics Revisited
In Current Topics in Physics. Proceedings of Inauguration Conference of Asia-Pacific Centre of Theoretical Physics, Seoul (Korea), Editors: Y.M. Cho, J.B. Hong and C.N. Yang, Vol.2, p.678-687 (1998).
16. Maximally Realistic Causal Quantum Mechanics
(with S.M.Roy)
Phys.Letters A 255,201-208 (1999).
17. Bell inequalities in phase space and their violation in quantum mechanics
(with G. Auberson,G. Mahoux and S.M. Roy)
Phys.Letters A 300, 327-333 (2002).
18. Bell inequalities in four dimensional phase space and the three marginal theorem
(with G. Auberson, G. Mahoux and S.M. Roy)
Journal of Mathematical Physics 44, 2729-2747 (2003)
(Also included in Virtual Journal of Quantum Information 3, #7, July 2003).
19. Phase Space Bell Inequalities,Three Marginal theorem and Quantum Entanglement Measures
with G. Auberson, G. Mahoux and S.M. Roy
In Proceedings of the Sixth International Conference on Quantum Communication, Measurement and Computing
Edited by J.H. Shapiro and O. Hirota, Rinton Press, Princeton, U.S.A. (2003).
20. Marginal distributions in $(2N)$ -dimensional phase space and the quantum $(N + 1)$ marginal theorem
(with G. Auberson, G. Mahoux and S.M. Roy)
Journal of Mathematical Physics 45, 4832-4854 (2004).
21. Quantum Mechanics and Reality,
arXive: quant-ph/0412148 (2004)
to appear as a book chapter in a volume edited by B.V. Sreekantan, for the series of PHISPC volumes, Indian Council of Philosophical Research, New Delhi.

22. Hidden Variables, Non-Contextuality and Einstein Locality in Quantum Mechanics
 - (i) arXive: quant-ph/0507182 (2005)
 - (ii) in “History of Science and Philosophy of Science: A Historical Perspective of the Evolution of Ideas in Science”, ed. P.K. Sengupta, [History of Science, Philosophy and Culture in Indian Civilization, Vol. XIII, Part 6], Pearson Longman, Delhi/PHISPC, Centre for Studies in Chapter 15, p.339-373.

23. Joint Probabilities reproducing three EPR Experiments on two Qubits, (with S.M. Roy, D. Atkinson, G. Auberson and G. Mahoux), arXive: quant-ph/0607192 (2006). Mod. Phys. Lett. A22, 1717-1726 (2007).

24. Scientific Realism and Classical Physics
 - (i) arXive: 0805.1780 v1 (2008)
 - (ii) in “Materialism and Immaterialism in India and the West: Varying Vistas”, ed. Partha Ghose, [History of Science, Philosophy and Culture in Indian Civilization, Vol. XII Part 5], Pearson Longman, Delhi/PHISPC, Centre for Studies in Civilization, New Delhi (2010), Chap. 34, p. 609-617.

25. Bohm’s realist interpretation of Quantum Mechanics,
 - (i) arXive: 0805.1779 v1 (2008)
 - (ii) in “Materialism and Immaterialism in India and the West: Varying Vistas”, ed. Partha Ghose, [History of Science, Philosophy and Culture in Indian Civilization, New Delhi (2010), Ch.45, p. 833-851].

Mathematical notes and Biology:

1. Analytical Theory of the Control Equations for Protein Synthesis in Goodwin Model
Bulletin of Mathematical Biology, 39, 565-575 (1977).
2. A Conjectured Property of Legendre Functions
(with A.K. Raina)
SIAM-review (Problem 79-14) 21, 395 (1979) and 22, 369-372 (1980).
Reprinted in
Problems in Applied Mathematics: Selections from SIAM Review.
Edited by M.S. Klamkin, SIAM, Philadelphia 194-197 (1990).
3. Non-linear Biological Oscillators: Action-Angle Variable Approach with an Application Cowan's Model of Neuroelectric Activity
Bulletin of Mathematical Biology 43, 21-32 (1981).
4. On the Feigenbaum-Cvitanovic Equation in the Theory of Chaotic Behaviour
Pramana, 24, 31-37 (1985).
(Ramanna Festschrift).

History, Philosophy and Social aspects of Science:

1. (book review) Science and the New Nations
Editor: Ruth Grubber, Basic Books, New York, 1961, 314pp, \$6.50
The Asian Student (San Francisco), p8, March 31, 1962.
2. Quest for Elementary Particles
Physics News, 1, 11-16 (1970).
3. The Discovery of Bose Statistics
Science Today, 8, No.7, 29-34 (January 1974).
4. Reaction to Science and Technology
Society and Science, Vol.2, No.2, 1-10 (April-June 1979).
5. (book review) Five Eminent Scientists : Their Lives and Work,
By D.K. Misra (Kalyani Publishers, Delhi-Ludhiana, 1976)
Society and Science 2, #3, p71 (1979).
6. If the Universe had one Space Dimension
Science Today, Vol.15, No.1, 80 (January 1981).
7. Meghnad Saha : Asian Pioneer
Science Age, 2, #5, 26-30 (May 1984).
8. Niels Bohr : Physicist and Philosopher
Science Age, 3, #10, 13-20 (October 1985).
9. Niels Bohr – A Profile
Editors: A.N. Mitra, L.S. Kothari, V. Singh and S.K. Trehan
Indian National Science Academy, Delhi (1985).
10. Homi Jehangir Bhabha : Collected Scientific Papers
Editors: B.V. Sreekantan, Virendra Singh and B.M. Udgaonkar
Tata Institute of Fundamental Research, Bombay (1986).

11. Why did the Scientific Revolution take place in Europe and not elsewhere?
 Presidential Address delivered at the Annual General Body Meeting of the Indian Physics Association held at Waltair on December 28, 1986.
 - (i) Science Age, 5, #6, p.5-8 (June 1987) (a slightly abridged version)
 - (ii) Physics News, 18, #1, p.4-11 (March 1987)
 - (iii) Asia-Pacific Physics News, 2, #2, p.20-24 (November 1987). Reprinted from Physics News (March 1987)
 - (iv) Indian Journal of History of Science, 22, 341-333 (1987).
12. "The Dr. Bhabha I knew"
 Nuclear Power 1, #11, p.7 (November 1987).
 (ii) Science Reporter 46, #10, p. 12 (Oct. 2009).
13. Physics Community in India and its Problems of Isolation
 Physics News, 17, #1, 37-41 (March 1988).
 Presidential Address delivered at the General Body Meeting of the Indian Physics Association at Nagpur on December 29, 1985.
14. Celebrating the Raman Centenary
 - (i) Physics News, 19, #4, p.147-151 (December 1988)
 - (ii) Asia-Pacific Physics News, 4, #1, 25-28 and 37 (June/July 1989).
 Reprinted from Physics News (December 1988).
 - (iii) The Scientist in Society, Thema, Calcutta p.36-47 (2000).
15. Meghnad Saha : His Science and Life
 - (i) Maer's MIT Pune Journal 1, #3, 15-32 (August-October 1992)
 - (ii) Current Science 64, #7, 530-536 (1993).
 - (iii) ASPAP (Association of Asia-Pacific Physical Societies Bulletin 3, #2, 21-27 (June 1993).
 - (iv) Physics News, 24, #4, 125-134 (December 1993).

16. Scientific Research and Indian Agriculture.
Convocation Address delivered at University of Agricultural Sciences,
Bangalore (November 12, 1992).
17. The Determinants of the Scientific Revolution
Chapter 4 in Science in the West and India : Some Historical Aspects,
Editors: B.V.. Subbarayappa and N. Mukunda, Himalaya Publishing
House, Bombay, p.128-147 (1995).
Reprinted in
RESONANCE 2, #9, 83-90 (Sept.1997) and 2, #10, 82-91 (Oct. 1997).
18. Epistemology of Physical and Behavioural Sciences
Vivek 8, #4, 5-15 (October 1995).
to appear also as a book chapter in a volume edited by B.V. Sreekan-
tan for the series of PHISPC volumes, Indian Council of Philosophical
Research, New Delhi.
19. Erwin Schrödinger-A Sketch
Resonance, 4, #2, 3-5 (1998).
20. H.J. Bhabha
in “The Scientist in Society”, Thema, Calcutta, p.181-193 (2000),
also available as
(ii) H.J. Bhabha: Architect of Modern Science and Technology in India,
arXive: 0906.3356 (June 2009).
21. (book review) The Odd Quantum
by Sam Treiman (Princeton Univ Press, Princeton, N.J., 1999, 262pp.,
\$24.95)
Current Science 78, 1020 (2000).
22. Quantum Mechanics and Reality,
arXive: quant-ph/0412148 (2004)
to appear as a book chapter in a volume edited by B.V. Sreekantan,
for the series of PHISPC volumes, Indian Council of Philosophical Re-
search, New Delhi.
23. Werner Heisenberg (1901-1976): His Life and Science
Resonance, 9, #8, 3-5 (2004).

24. Bhabha, Homi Jehangir (1909-1966): theoretical physicist
Oxford Dictionary of National Biography, Oxford University Press, Oxford (2004).
25. (book review) Ancient Indian Astronomy and Contributions of Samanta Chandra Sekhar,
edited by L.Satpathy, (Narosa Publishing House, New Delhi, 2003)
Current Science 87, 393-394 (2004).
26. Hidden Variables, Non-Contextuality and Einstein Locality in Quantum Mechanics
(i) arXive: quant-ph/0507182 (2005)
(ii) in “History of Science and Philosophy of Science: A Historical Perspective of the Evolution of Ideas in Science”
ed. P.K. Sengupta, [History of Science, Philosophy and Culture in Indian Civilization, Vol. XIII, Part 6], Pearson Longman, Delhi/PHISPC, Centre for Studies in Chapter 15, p.339-373.
27. Einstein and the Quantum,
Current Science 89, #12, 2102-2112 (2005),
arXive: quant-ph/051080 (2005),
also appeared as a book chapter in The Legacy of Albert Einstein,
edited by S.Wadia, p.165-191, World Scientific, Singapore (2007).
28. The quantum leap
Frontline 22, #10, p.22-24 (May 7-20, 2005).
29. (book review) Philosophy of Symmetry
by Sundar Sarukkai
(Indian Institute of Advanced Study, Shimla. 2004, 167pp., Rs.250)
Current Science 88, 648-650 (2005).
30. Albert Einstein: His Annus Mirabilis 1905,
(i) arXive: physics/0701240 (2007),
(ii) in “Remembering Einstein: Lectures on Physics and Astrophysics”,
edited by B.V. Sreekantan (a Nehru Centre, Mumbai Volume), Oxford Univ. Press, New Delhi (2010) p. 1-21.
31. Prof. B.M. Udgaonkar – My Dada.
in B.M. Udgaonkar, Eminent Scientist and Educationist, ed. by B.G.

- Phondke, P.R. Sheth, S. Naik-Satam and A.P. Deshpande, NCSE and HBCSE, Mumbai (2007), p.43-44.
32. A Century of the Quantum,
Sampark 5, #2, p.4-6 (2007).
 33. Scientific Realism and Classical Physics
 - (i) arXive: 0805.1780 v1 (2008)
 - (ii) in “Materialism and Immaterialism in India and the West: Varying Vistas”, ed. Partha Ghose, [History of Science, Philosophy and Culture in Indian Civilization, Vol. XII Part 5], Pearson Longman, Delhi/PHISPC, Centre for Studies in Civilization, New Delhi (2010), Chap. 34, p. 609-617.
 34. Bohm’s realist interpretation of Quantum Mechanics,
 - (i) arXive: 0805.1779 v1 (2008)
 - (ii) in “Materialism and Immaterialism in India and the West: Varying Vistas”, ed. Partha Ghose, [History of Science, Philosophy and Culture in Indian Civilization, New Delhi (2010), Ch.45, p. 833-851].
 35. An Avadhi language account of an earthquake in medieval North India
Cirea A.D. 1500,
Current Science 96, 1648-1649 (2009).
 36. Professor Nanda Dulal Sengupta: An appreciation, Foreward to collected Scientific Papers of Prof. N.D. Sengupta.
TIFR Library, archived (2009).
 37. Bhabha’s Contribution to Elementary Particle Physics and Cosmic Ray Research,
 - (i) Physics News 39, #1 (Bhabha Centenary issue), 24-33 (Jan. 2009), Reprinted in
 - (ii) Resonance 14, #5, 430-454 (May 2009)
 - (iii) “Tribute to a Titan: Birth Centenary of Homi Jehangir Bhabha”, ed. by D.K. Ghosh and A.K. Grover, Indian Physics Association, Mumbai (2009) p. 19-36.
Also available at
 - (iv) arXive: 0905.2264 (May 2009).
 38. Chandrasekhara Venkata Raman (1888-1970), in “The Great Scientists” ed. Andrew Robinson, Thames and Hudson Ltd., London.