

## CURRICULUM VITAE

*January, 2011*

### JOSEPH SCHECHTER

Professor of Physics  
Department of Physics  
Syracuse University  
Telephone: (315) 443-5968

#### Education:

1959 B.EE. Cooper Union (New York City), Electrical Engineering  
1965 Ph.D. University of Rochester, Physics

#### Professional Employment

1965-1967      Research Associate, Fermi Institute (Univ. of Chicago)  
1967-1970      Assistant Professor, Syracuse University  
1970-1974      Associate Professor, Syracuse University  
1974-to present   Professor, Syracuse University

#### Awards and Honors

Fellow of the American Physical Society  
William Wasserstrom award for "excellence in graduate teaching".

#### Conferences attended from 1988

Tenth Annual Montreal-Rochester-Syracuse-Toronto Meeting, Toronto, May 9 and 10, 1988.

Division of Particles and Fields of the APS Annual Meeting, Storrs, Ct. August 1988.

11th Annual MRST Meeting, Syracuse, May 9 and 10, 1989.

~~European Physical Society Annual Meeting; Madrid, Spain September 6-13, 1989.~~

Okubofest, Rochester May 4-5, 1990.

12th Annual MRST Meeting, Montreal, May 14-15, 1990.

13th Annual MRST Meeting, Rochester, May 6-7, 1991.

Fifteenth International Warsaw Meeting on Elementary Particle Physics "Quest for Links to New Physics" May 25-29, 1992.

Workshop on baryons as Skyrme solitons; Siegen, Germany, September 28-30, 1992.

15th Annual MRST Meeting, Syracuse, May 13-15, 1993.

CEBAF user group retreat, Snowshoe, West Virginia, May 21-25, 1993.

International Workshop on the Quark Structure of Baryons, Trento, Italy, Oct. 4-8, 1993.

PASCOS 94, Syracuse, May 17-24, 1994.

Workshop on Chiral Dynamics in Hadrons and Nuclei, Seattle, March 12-26, 1995.

International Workshop on the Standard Model at Low Energies, Trento, Italy, April 29-May 5, 1996.

19th Annual MRST meeting, Syracuse, May 12-13, 1997.

20th Annual MRST meeting, McGill University, May 12-13, 1998.

Conference/Workshop, "Physics of Strangeness", National Institute for Nuclear Theory, University of Washington (Seattle), Oct. 12-23, 1998.

Conference/Workshop "Chiral effective theories", Physikzentrum-Bad Honnef (Germany), Nov. 30 - Dec. 4, 1998.

Minnnowbrook "Symposium on the structure of space-time", Blue Mountain Lake, NY, May 28-30, 1999.

Conference "Hadron physics: effective theories of low energy QCD", Coimbra, Portugal, Sept. 10-15, 1999.

MRST 2000 meeting, Rochester, May 8-9, 2000.

Conference/workshop "Possible existence of the sigma meson and its implications for hadron Physics", Yukawa Institute, Kyoto, Japan, June 12-14, 2000.

MRST 2001 meeting, London, Ontario, May 15-18, 2001.

Conference, "Compact stars in the QCD phase diagram", Copenhagen, Denmark, Aug. 15-18, 2001.

Conference, "Hadron 2001", Protvino, Russia, Aug. 26-Sept. 1, 2001.

Conference, Theoretical High Energy Physics, SUNY Institute of Technology, Utica, NY, June 6, 2002.

2002 International workshop on strong coupling gauge theories and effective field theories, Nagoya, Japan Dec. 10-13, 2002.

Conference "MRST 2003", Syracuse, NY, May 13-15, (2003)

Conference, Scalar mesons: an interesting puzzle for QCD, Utica, NY, May 16-18, 2003.

Conference, Spacetime and fundamental interactions, quantum aspects, Vietri sul Mare, Italy, May 26-31, 2003.

Conference "MRST'04", Concordia University, Montreal, Canada, May 12-14, 2004.

Dalitz Workshop at SLAC, Menlo Park, CA, Dec. 5, 2004.

Conference, "MRST'05", SUNYIT, Utica, May 16-18 2005.

2006 international workshop on origin of mass and strong coupling gauge theories, Nagoya, Japan, Nov. 21-26 2006.

International conference MENU 2007, Julich, Germany Sept 10-14 2007.

Mathematics in the modern world- 50<sup>th</sup> anniversary of the Sobolev Institute, Novosibirsk, Russia Sept 17-23 2007.

Conference QCD08, Montpellier, France July 7-12 2008.

Workshop Dynamical electroweak symmetry breaking, Odense, Denmark, Sept 9-13 2008.

Workshop Nov 5-8 2009, Lecture part of XII Mexican Workshop on Particles and Fields, Culiacan, Mexico.

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Workshop Nov 9-Nov 14 2009, conference part of above meeting, Mazatlan, Mexico.

## **Sabbatical**

Fall semester, 2009 at University of Southern Denmark (Odense).

## A. PUBLICATIONS OF JOSEPH SCHECHTER

### A. Publications in Letter Journals

1. The Strangeness Changing Axial Vector Coupling Constant; with L. Pandit, *Phys. Letts.* **19**, 56 (1965).
2. Nonleptonic Decays of Hyperons; with Y. Hara and Y. Nambu, *Phys. Rev. Letts.* **16**, 380 (1966).
3. Weak Interaction Universality and Octet Dominance; with Y. Chiu, *Phys. Rev. Lett.* **16**, 1022 (1966).
4. Meson-Meson Scattering in the Quark Model and the Adler Sum Rules; with Y. Chiu, *N.C. Letter* **66**, 548 (1966).
5. Asymptotic Chiral Symmetry; with G. Venturi, *Phys. Rev. Lett.* **19**, 276 (1967).
6. Higgs Mesons and High Energy Behavior; with Y. Ueda, *Lettre al Nuovo Cimento* **8**, 991 (1973).
7. A New Contribution to the  $D^\pm - D^0$  Mass Splitting; with S. Borchardt, J. Kandaswamy and M. Singer, *Phys. Letts.* **66B**, 95 (1977).
8. Estimate of the Pseudoscalar Decay Constant; with J. Kandaswamy and M. Singer, *Phys. Rev. Letts* **38**, 933 (1977)
9. Does the Decay Mode  $K^+ \rightarrow \pi^+ + \text{Axion}$  Already Rule Out the Axion ?; with J. Kandaswamy and P. Salomonson, *Phys. Letts.* **74B**, 377 (1978).
10. A Test for Neutrino Masses; with T. Kalogeropoulos and J. Valle, *Phys. Lett.* **B86**, 72 (1979).
11. Spontaneously Broken Supersymmetry and Poincare Invariance; with X.R. Tata and E.C.G. Sudarshan, *Phys. Letts.* **B123**, 308 (1983).
12. The Missing Charge in the Rubakov Process; with A.P. Balachandran, *Phys. Rev. Lett.* **51**, 1418 (1983).
13. A Physical CP Phase and Maximal CP Violation; with M. Gronau, *Phys. Rev. Letts.* **54**, 385 (1985).
14. Goldstone Bosons and Scalar Gluonium; with H. Gomm, *Phys. Letts.* **B158**, 449 (1985).

15. Model for Maximal CP Nonconservation; with M. Gronau and R. Johnson, *Phys. Rev. Letts.* **54**, 2176 (1985).
16. The Neutrino See-Saw in SO(10); with R. Johnson and S. Ranfone, *Phys. Letts.* **179**, 355 (1986).
17. Can a Four Generation "Fritzsch" Model with a Light Top Quark Explain the  $B_d - \bar{B}_d$  Mixing?; with M. Gronau and R. Johnson, *Phys. Lett.* **B201**, 151 (1988).
18. Higher Order Perturbation Theory for the SU(3) Skyrme Model; with N.W. Park and H. Weigel, *Phys. Letts.* **B224**, 171 (1989).
19. Axial Current Matrix Elements of the Nucleon Based on an Exact Diagonalization of the SU(3) Skyrme Model Hamiltonian; with N.W. Park and H. Weigel, *Phys. Lett.* **B228**, 420 (1989).
20. Effective Lagrangian for the Two Component Approach to the "Proton-Spin" Puzzle; with V. Soni, A. Subbaraman, and H. Weigel, *Mod. Phys. Lett.* **A5**, 2543 (1990).
21. Two-Component Approach to the "Proton-Spin" Puzzle in Generalized Skyrme Models; with V. Soni, A. Subbaraman, and H. Weigel, *Phys. Rev. Lett.* **65**, 2955 (1990).
22. Breathing Mode Quantization in an Extended SU(3) Skyrme Model; with H. Weigel, *Phys. Lett.* **B261**, 235 (1991).
23. Simpson's Neutrino and the Singular See-Saw; with T.J. Allen, R. Johnson, S. Ranfone, and J.W.F. Valle, *Mod. Phys. Lett.* **A6**, 1967 (1991).
24. Brief Review: The effective Lagrangian approach to the "proton-spin" puzzle and the issue of two components; with A. Soni, A. Subbaraman and H. Weigel, *Mod. Phys. Lett.* **A7**, 1 (1992).
25. Particle Conjugation and the  $1/N_c$  corrections to  $g_A$ ; with H. Weigel, *Mod. Phys. Lett.* **A10**, 885 (1995).
26. Scaling Behavior in Soliton Models; with M. Harada, F. Sannino and H. Weigel, *Phys. Lett.* **B384**, 5 (1996).
27. Hidden Structure in a Lagrangian for Hyperfine Splitting of the Heavy Baryons; with M. Harada, A. Qamar, F. Sannino and H. Weigel, *Phys. Lett.* **B390**, 329 (1997).
28. Comment on "Confirmation of the Sigma Meson"; with M. Harada and F. Sannino, *Phys. Rev. Letts.* **78**, 1603 (1997).

29. Anomaly Induced QCD Potential and Quark Decoupling; with Stephen D.H. Hsu and F. Sannino, *Phys. Lett.* **B427**, 300 (1998).
30. Vector-meson dominance model for radiative decays involving light scalar mesons; with D. Black and M. Harada, *Phys. Rev. Lett.* **88**, 181603 (2002).
31. Remark on pion scattering lengths, D. Black, A.H. Fariborz, R. Jora, N.W. Park, J. Schechter and M.N. Shahid, *Mod. Phys. Lett. A* **24**, No. 28, 2285 (2009) , arXiv: 0904.2161 [hep-ph].

## B. Publications in Regular Refereed Journals

1. Three Photon Decay of Positronium  $^1S$  State as a Test of Charge Conjugation Invariance; *Phys. Rev.* **132**, 841 (1963).
2. Possible Existence of a Boson Isocuplet; with B. Lee and S. Okubo, *Phys. Rev.* **B219**, 135 (1964).
3. Prediction of a  $\pi\eta$  Resonance; with S. Okubo, *Phys. Rev.* **135**, B1060 (1964).
4. Permutation Symmetry and a Derivation of Unitary Symmetry; with Y. Ueda and S. Okubo, *Ann. Phys.* **32**, 424 (1965).
5. Weak Currents in Broken  $U(3)\times U(3)$ ; with Y. Ueda, *Phys. Rev.* **144**, 1938 (1966).
6. Nonleptonic Decays of Hyperons in Broken  $SU(3)\times SU(3)$ ; with Y. Ueda, *Phys. Rev.* **148**, 1424 (1966).
7. Theory of Nonleptonic Hyperon Decays; with Y. Chiu and Y. Ueda, *Phys. Rev.* **150**, 1201 (1966).
8. Mass Splitting in the Current-Current Picture; with Y. Chiu, *Nuovo Cimento* **47**, 214 (1967).
9. Theory of Nonleptonic Decays II;  $K \rightarrow 2\pi$ ; with Y. Chiu and Y. Ueda, *Phys. Rev.* **157**, 1317 (1967).
10. CP Violation in a Current-Current Model; with Y. Chiu *Phys. Rev.* **167**, 1345 (1968).
11. Symmetry Restrictions on  $K \rightarrow 2\pi$  Amplitudes, *Phys. Rev.* **161**, 1660 (1967).
12. Final State Interaction Effects in the Algebra-of-Currents Approach to the Three-Pion Decay Modes of  $\eta$  and  $K$  Mesons; with Y.T. Chiu and Y. Ueda, *Phys. Rev.* **161**, 1612 (1967).
13. Phenomenological Chiral Model for Nonleptonic Hyperon Decays, *Phys. Rev.* **174**, 1829 (1969).

14.  $K^+$ -Nucleon Scattering in an Effective Chiral Lagrangian Model; with Y. Ueda and G. Venturi, *Phys. Rev.* **177**, 2311 (1969).
15. Baryon Excitation Form Factors and Asymptotic Chiral Symmetry; with Y. Ueda *Phys. Rev.* **177**, 2300 (1969).
16. Note on the Gauge Field Chiral Lagrangian; with Y. Ueda, *Phys. Rev.* **188**, 2184 (1969).
17.  $\Omega^-$  -Decay; with D.N. Goswami, *Phys. Rev.* **D1**, 290 (1970).
18. Spontaneous Breakdown of Weak and Electromagnetic Interaction Symmetry; with Y. Ueda, *Phys. Rev.* **D2**, 736 (1970).
19. Electromagnetic Perturbation of the Pseudoscalar Mass Spectrum; with Y. Ueda, *Phys. Rev.* **D3**, 176 (1971).
20. Symmetry Breaking and Spin Zero Mass Spectrum; with Y. Ueda, *Phys. Rev.* **D3**, 168 (1971).
21. Van Hove Model and Nonleptonic Hyperon Decays; with D.N. Goswami and Y. Ueda, *Phys. Rev.* **D3**, 2128 (1971).
22. General Treatment of Chiral and Scale Breaking in the SU(3) Sigma Model; with Y. Ueda, *Phys. Rev.* **D3**, 2874 (1971).
23.  $\Delta I = 1$  Mass Differences and  $\eta \rightarrow 3\pi$  Decay; with Y. Ueda, *Phys. Rev.* **D1**, 733 (1971).
24. CP Violation and Chiral Symmetry; with Y. Ueda, *Phys. Rev.* **D5**, 2821 (1972).
25. Symmetry Breaking and the Pionic Decays of K Mesons; with D. Goswami and Y. Ueda, *Phys. Rev.* **D5**, 2276 (1972).
26. A Possible Origin for Symmetry Breaking; with Y. Ueda, *Phys. Rev.* **D5**, 2846 (1972).
27. Unified Weak-Electromagnetic Gauge Schemes Based on the Three Dimensional Unitary Group; with Y. Ueda, *Phys. Rev.* **D8**, 484 (1973).
28. High Energy Behavior of Gauge Theory Tree Graphs; with Y. Ueda, *Phys. Rev.* **D7**, 3119 (1973).
- ~~29.  $\eta \rightarrow 3\pi$  in a Renormalizable SU(3) Sigma Model; with W. Hudnall, *Phys. Rev.* **D9**, 2111 (1974).~~
30. Phenomenological Dynamics for CP Violation; with M. Singer, *Phys. Rev.*, 3866 (1973).



31. Spontaneous "Cabibbo" Suppression; with M. Singer, *Phys. Rev.* **D6**, 1769 (1974).
  32. Monopole Theories with Massless and Massive Gauge Fields; with A.P. Balachandran and H. Rupertsberger, *Phys. Rev.* **D11**, 2260 (1975).
  33. Semi-Leptonic Neutral Current Decays; with M. Singer, *Il Nuovo Cimento*, **26A**, 117 (1975).
  34. Hamiltonian Formulation of Monopole Theories with Strings; with A.P. Balachandran, R. Ramachandran, H. Rupertsberger and K.C. Wali, *Phys. Rev.* **D13**, 354 (1976).
  35. Strings, Monopoles, and Meson States; with A.P. Balachandran, R. Ramachandran, H. Rupertsberger, and K.C. Wali, *Phys. Rev.* **D13**, 361 (1976).
  36. SU(4) Sigma Model; with M. Singer, *Phys. Rev.* **D12**, 2781 (1975).
  37. Possible Enhancement of the Leptonic Decays of Charmed Pseudoscalars; with J. Kandaswamy and M. Singer, *Phys. Rev.* **D13**, 3151 (1976).
  38. Yang-Mills Particle in 't Hooft's Gauge Field, *Phys. Rev.* **D14**, 524 (1976).
  39. Leptonic Octets and Heavy-Lepton Decays in an SU(3) Gauge Theory; with J. Kandaswamy, *Phys. Rev.* **D15**, 251 (1977).
  40. An Effective Strong Interaction Lagrangian; with V. Mirelli, *Phys. Rev.* **D15**, 1361 (1977).
  41. Gauge Boson Mixing in an SU(3)  $\times$  U(1) Theory; with J. Kandaswamy and M. Singer, *Phys. Letts.* **70B**, 204 (1977).
  42. Current Algebra with a "Four Flavor" Effective Lagrangian; with J. Kandaswamy and M. Singer, *Phys. Rev.* **D17**, 1430 (1978).
  43. Mass of the Axion; with J. Kandaswamy and P. Salomonson; *Phys. Rev.* **D17**, 3051 (1978).
  44. Enforcing Strong T and P Conservation; with J. Kandaswamy and Per Salomonson, *Phys. Rev.* **D19**, 2757 (1979).
  45. Comment on the Lepton Mixing Matrix; with J.W.F. Valle, *Phys. Rev.* **D20**, 309 (1980).
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46. Is the Effective Lagrangian for QCD a Sigma Model?; with C. Rosenzweig and G. Trahern, *Phys. Rev.* **D21**, 3388 (1980).

47. Effective Lagrangian with Two Color-Singlet Gluon Fields, *Phys. Rev.* **D21**, 3393 (1980).
48. Canonical Neutral Current Predictions from the Weak Electromagnetic Gauge Group  $SU(3) \times U(1)$ ; with M. Singer and J.W.F. Valle, *Phys. Rev.* **D22**, 738 (1980).
49. Neutrino Masses in  $SU(2) \times U(1)$  Theories; with J.W.F. Valle, *Phys. Rev.* **D22**, 2227 (1980).
50. Properties of Scalar Gluonium; with A. Salomone and T. Tudron, *Phys. Rev.* **D23**, 1143 (1981).
51. On the Need for Spontaneous Breakdown of Chiral Symmetry; with A. Salomone and T. Tudron, *Phys. Rev.* **D24**, 492 (1981).
52. Neutrino Oscillation Thought Experiment; with J.W.F. Valle, *Phys. Rev.* **D23**, 1666 (1981).
53. Majorana Neutrinos and Magnetic Fields, with J.W.F. Valle, *Phys. Rev.* **D24**, 1883 (1981).
54. Canonical Quantization of a QCD Effective Lagrangian, *Phys. Rev.* **D25**, 601 (1982).
55. Pseudoscalar Glueball, the Axial-Vector Anomaly, and the Mixing Problem for Pseudoscalar Mesons; with C. Rosenzweig and A. Salomone, *Phys. Rev.* **D24**, 2545 (1981).
56. Neutrino Decay and Spontaneous Violation of Lepton Number; with J.W.F. Valle, *Phys. Rev.* **D25**, 774 (1982).
57. Neutrinoless Double Beta Decay in  $SU(2) \times U(1)$  Theories; with J.W.F. Valle, *Phys. Rev.* **D25**, 2951 (1982).
58. Mechanical Analog for a QCD Phase Transition; with A. Salomone, *Phys. Rev.* **D26**, 473 (1982).
59. How does a Pseudoscalar Glueball Come Unglued? with C. Rosenzweig and A. Salomone, *Nucl. Phys.* **B206**, 12 (1982).
60.  $\theta$  (1640) in an Effective Lagrangian Framework, *Phys. Rev.* **D27**, 1109 (1983).
61. Monopole Induced Proton Disintegration; with A.P. Balachandran, *Phys. Rev.* **D29**, 1184 (1984).
62. Superconformal Anomalies and the Effective Lagrangian for Pure Supersymmetric QCD; with O. Kaymakçalan, *Nucl. Phys.* **B239**, 519 (1984).

63. Non-Abelian Anomaly and Vector Meson Decay; with O. Kaymakcalan and S G. Rajeev, *Phys. Rev. D***30**, 594 (1984).
64. Anomalous Spin-1-Meson Decays from the Gauged Wess-Zumino Term; with H. Gomm and O. Kaymakcalan, *Phys. Rev. D***30**, 2345 (1984).
65. Chiral Lagrangian of Pseudoscalars and Vectors; with O. Kaymakcalan, *Phys. Rev. D***31**, 1109 (1985).
66. Constraints on the Mixing of a Fourth Family of Quarks; with M. Gronau, *Phys. Rev. D***31**, 1668 (1985).
67. On Parametrizing the N-Generation Quark Mixing Matrix; with M. Gronau and R. Johnson, *Phys. Rev. D***32**, 3062 (1985).
68. Scale Anomaly and the Scalars; with H. Gomm, P. Jain, and R. Johnson, *Phys. Rev. D***33**, 801 (1986).
69. Prediction of the Four Generation K-M Matrix; with M. Gronau and R. Johnson, *Phys. Rev. D***33**, 2641 (1986).
70. CP Violation and Generation Mixing; with M. Gronau, V. Gupta and R. Johnson, *Phys. Rev. D***33**, 3368 (1986).
71. Bag-Formation in a Chiral Model; with H. Gomm, P. Jain and R. Johnson, *Phys. Rev. D***33**, 3476 (1986).
72. Electromagnetism in a Gauge Chiral Model; *Phys. Rev. D***34**, 868 (1986).
73. Fritzsche-Stech Model in SO(10); with R. Johnson and S. Ranfone, *Phys. Rev. D***35**, 282 (1987).
74. Constraints on Bag Formation from the Scalar Sector; with P. Jain and R. Johnson, *Phys. Rev. D***35**, 2230 (1987).
75. Strongly Coupled Quarks in the Standard Model; with R. Johnson, *Phys. Rev. D***36**, 1484 (1987).
76. Reexamining the Fritzsche-Stech SO(10) Model of Quarks and Leptons; with M. Gronau, R. Johnson and S. Ranfone, *Phys. Rev. D***37**, 2597 (1988).
77. Bag Formation in the Presence of Vector Mesons. II: Inclusion of Scalars; with R. Johnson, U. Meissner and N.W. Park, *Phys. Rev. D***37**, 1285 (1988).
78. Realistic Pseudoscalar-Vector Chiral Lagrangian and its Soliton Excitations; with P. Jain, R. Johnson, U. Meissner and N.W. Park, *Phys. Rev. D***37**, 3252 (1988).

79. Aspects of the Chiral Quark Model; with P. Jain and R. Johnson, *Phys. Rev. D***38**, 1571 (1988).
80. Quantum Stabilization of the Skyrme Soliton; with P. Jain and R. Sorkin, *Phys. Rev.* **39**, 998 (1989).
81.  $B - \bar{B}$  Mixing and Two-Scalar-Doublet Model Predicting a Fritzsche Structure; with M. Gronau and R. Johnson, *Phys. Rev. D***39**, 1913 (1989).
82. Realistic Pseudoscalar-Vector Lagrangian. Static and Dynamical Baryon Properties; with U. Meissner, N. Kaiser and H. Weigel, *Phys. Rev. D***39**, 1956 (1989).
83. The Neutron-Proton Mass Splitting Puzzle in Skyrme and Chiral Quark Models; with P. Jain, R. Johnson, N.W. Park and H. Weigel, *Phys. Rev. D***40**, 855 (1989).
84. Kaon Excitation in the SU(3) Skyrme Model; with H. Weigel, N.W. Park and Ulf-G. Meissner, *Phys. Rev. D***42**, 3177 (1990).
85. Symmetry Breaking and Hyperon Decays in the Skyrme Model; with N.W. Park and H. Weigel, *Phys. Rev. D***41**, 2836 (1990).
86. Interpretation of the "Quantum Stabilized Skyrmion"; with P. Jain and R. Sorkin, *Phys. Rev. D***41**, 3855 (1990).
87. Singlet Axial Current and the "Proton Spin" Question; with R. Johnson, N.W. Park, V. Soni and H. Weigel, *Phys. Rev. D***42**, 2998 (1990).
88. Electromagnetic, Axial and Strange Currents in the Skyrme Model: Effects of Symmetry Breaking; with N.W. Park and H. Weigel, *Phys. Rev. D***43**, 869 (1991).
89. Neutrino "Spin Rotation" in a Twisting Magnetic Field; with C. Aneziris, *Int. J. Mod. Phys. A***6**, 2375 (1991).
90. The Breathing Mode in the SU(3) Skyrme Model; with H. Weigel, *Phys. Rev. D***44**, 2916 (1991).
91. Cutoff quantization and the Skyrmion; with B.S. Balakrishna, V. Sanyuk and A. Subbaraman, *Phys. Rev. D***45**, 344 (1992).
92. Three Majorana neutrinos in a twisting magnetic field; with C. Aneziris, *Phys. Rev. D***45**, 1053 (1992).
93. Approach to color transparency in the soliton picture of the nucleus; with P. Jain and H. Weigel, *Phys. Rev. D***45**, 1470 (1992).

94. Second order "flavor" perturbation theory for the baryons; with A. Subbaraman, *Int. J. Mod. Phys. A* **7**, 7135 (1992).
95. Role of light vector mesons in the heavy particle chiral Lagrangian; with A. Subbaraman, *Phys. Rev. D* **48**, 332 (1993).
96. Effective hadron dynamics: from meson masses to the proton spin puzzle; with A. Subbaraman and H. Weigel, *Phys. Rev. D* **48**, 339 (1993).
97. Heavy quark solitons; with K. Gupta, M.A. Momen and A. Subbaraman, *Phys. Rev. D* **47**, R4835 (1993).
98. Resonant and non-resonant pieces of  $D \rightarrow \bar{K}\pi$  semileptonic transition amplitude with A. Subbaraman and S. Surya, *Int. J. Mod. Phys. A* **9**, 3773 (1994).
99. Heavy quark solitons: strangeness and symmetry breaking; with A. Momen and A. Subbaraman, *Phys. Rev. D* **49**, 5970 (1994).
100. Heavy meson radiative decays and light vector meson dominance; with P. Jain and A. Momen, *Int. J. Mod. Phys. A* **10**, 2467 (1995).
101. Excited heavy baryons in the bound state picture; with A. Subbaraman, *Phys. Rev. D* **51**, 2311 (1995).
102. Resolving ordering ambiguities in the collective quantization by particle conjugation constraints; with H. Weigel, *Phys. Rev. D* **51**, 6296 (1995).
103. Exploring  $\pi\pi$  scattering in the  $1/N_c$  picture; with F. Sannino, *Phys. Rev. D* **52**, 96 (1995).
104. Heavy quark solitons: towards realistic masses, with A. Subbaraman, S. Vaidya and H. Weigel, *Nucl. Phys. A* **590**, 655 (1995).
105. Simple description of  $\pi\pi$  scattering to 1-GeV; with M. Harada and F. Sannino, *Phys. Rev. D* **54**, 1991 (1996).
106. Effects of symmetry breaking on the strong and electroweak interactions of the vector nonet, with M. Harada, *Phys. Rev. D* **54**, 3394 (1996).
107. Multiflavor Massive Schwinger Model with Non-Abelian Bosonization; with D. Delphenich, *Int. J. Mod. Phys. A* **12**, 5305 (1997).
108. Hyperfine Splitting of Low-lying Heavy Baryons; with M. Harada, A. Qamar, F. Sannino and H. Weigel, *Nucl. Phys. A* **625**, 789 (1997).
109. Generalization of the Bound State Model; with M. Harada, F. Sannino and H. Weigel, *Phys. Rev. D* **56**, 4098 (1997).

110. Toy Model for Breaking Super Gauge Theories at the Effective Lagrangian Level; with Francesco Sannino, *Phys. Rev. D***57**, 170 (1998).
  111. Remark on the Potential Function of the Linear Sigma Model; with David Delphenich, *Phys. Rev. D***57**, 3962 (1998).
  112. Evidence for a scalar  $\kappa(900)$  resonance in  $\pi\kappa$  scattering, with D. Black, A.H. Fariborz and F. Sannino, *Phys. Rev. D***58**, 054012 (1998).
  113. Pion-pion scattering in two dimensions; with D. Delphenich and S. Vaidya, *Phys. Rev. D***59**, 056004 (1999).
  114. Putative light scalar nonet; with D. Black A.H. Fariborz and F. Sannino, *Phys. Rev. D***59**, 074026 (1999).
  115. Eta prime goes to eta pi pi decay as a probe of a possible lowest-lying scalar nonet; with A.H. Fariborz, *Phys. Rev. D***60**, 034002 (1999).
  116. Chiral phase transition for SU(N) gauge theories in an effective Lagrangian approach; with F. Sannino, *Phys. Rev. D***60**, 056004 (1999).
  117. Mechanism for a next-to-lowest lying scalar meson nonet; with D. Black and A.H. Fariborz, *Phys. Rev. D***61**, 074001 (2000).
  118. Chiral Lagrangian treatment of pi eta scattering; with D. Black and A.H. Fariborz, *Phys. Rev. D***61**, 074030 (2000).
  119. Complementary Ansatz for the neutrino mass matrix, with D. Black, A.H. Fariborz and S. Nasri, *Phys. Rev. D***62**, 073015 (2000).
  120. Unitarized pseudoscalar scattering amplitudes from three flavor linear sigma models; with D. Black, A.H. Fariborz, S.Moussa and S. Nasri, *Phys. Rev. D***64**, 014031 (2001).
  121. Possible Z-width probe of a "brane-world" scenario for neutrino masses; with S. Moussa, S. Nasri and F. Sannino, *Phys. Rev. D***65**, 096003 (2002).
  122. Effects of light scalar mesons in eta goes to 3 pi decay; with A. Abdel-Rehim, D. Black and A. H. Fariborz, *Phys. Rev. D***67**, 054001 (2003).
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