

ARNO BOHM
Curriculum Vitae

University of Texas at Austin
Department of Physics
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EDUCATION

Ph.D. 1966 Free University Berlin, West Germany, Theoretical Physics (with G. Ludwig)
Worked on axiomatic quantum field theory. Dissertation on spectrum generating groups (dynamical groups)
Cand. Phys. Technical University Berlin, West German, Physics and Mathematics
(with E. Kahler)
Abitur, Gymnasium Neustrelitz, East Germany

APPOINTMENTS:

Professor of Physics, University of Texas at Austin, 1975-present
Associate Professor of Physics, University of Texas at Austin, 1968-75
Research Associate, Syracuse University, New York, 1966-68
IAEA Research Fellow, International Center for Theoretical Physics, Trieste, Italy 1964-66
Research Fellow, University of Marburg, Germany, 4/64-9/64
Assistant Professor (Wissenschaftl. Assist.), Technical University, Karlsruhe, Germany, 1963-64

VISITING APPOINTMENT AND AWARDS:

Humboldt Award, 1999-2000, Max Planck Institute, Garching and University of Ulm, Germany
Elena Aizen de Moshinsky Chair, Spring 1997 and Spring 2000, UNAM, Mexico
Senior Fulbright Fellow, Tel Aviv University, Israel, 1987-88
Humboldt Prize, Werner Heisenberg Institute, Munich and University of Würzburg, Germany
Mortimer and Raymond Sackler Fellow, 1981, Tel Aviv University, Israel
Visiting Professor, Solvay Institute, Brussels, Belgium (1979)
Max Planck Institute, Munich, Germany (several visiting appointments 1971-81)
Visiting Professor, Institute for Theoretical Physics, Göteborg, Sweden, 1970

BOOKS:

1. A. Bohm, The Rigged Hilbert Space and Quantum Mechanics, Springer Lecture Notes in Physics, vol.78 (1978).
2. A. Bohm and M. Gadella, Dirac Kets, Gamow Vectors and Gelfand Triplets, Second Edition, Lecture Notes in Physics, vol 348, Springer, New York (1989).
- 3a. A. Bohm, Quantum Mechanics: Foundations and Applications, Springer, New York, First Edition (1979);
- 3b. AB, Quantum Mechanics, Second Edition (1986);

- 3c. AB, Kvantovaya Mekhanika, Russian Translation of Second Edition (1986 edition), Mir Publishers (1990);
- 3d. AB, Quantum Mechanics, Third revised and expanded Edition (1993);
- 3e. AB Quantum Mechanics, Paperback Third edition (2001);
- 3f. AB, Quantum Mechanics, First Indian Edition (2003); Third Indian Paperback (2011)
- 4a. A. Bohm, A. Mostafazadeh, H. Koizumi, et. al., The Geometric Phase in Quantum Systems, Springer, Berlin (2003),
- 4b. The Geometric Phase in Quantum Systems, Chinese Edition, Science Press, Beijing (2009).
5. A. Bohm, K.H. Doebner, P. Kielanowski, Irreversibility and Causality: Semigroups and Rigged Hilbert Spaces (Lecture Notes in Physics), Springer, Lecture Notes in Physics, 1996

PUBLICATIONS:

List Attached

SELECTED INVITED LECTURES and CONFERENCE PRESENTATIONS:

List Attached

GRANTS:

Welch (2) (6/1/00 to 5/31/03) (3) \$135,000 and (4) Time Asymmetric Quantum Theory: Irreversibility and Applications

International Center for Theoretical Physics, UNESCO, Trieste, Italy, July-August 2002, \$30,000, 5th International Workshop on Time Asymmetry and Irreversible Quantum Dynamics

NSF "Time Asymmetry and Relativistic Resonances" \$24,500, 2009-2010

SERVICE:

INTERNATIONAL:

Chairman and Co-Founder with Morton Hamermesh, John Archibald Wheeler, John Dollard of The Group Theory and Fundamental Physics Foundation which awards the Eugene Wigner Medal at the bi-annual International Group Theory Conferences.

Member, Standing Committee, International Group Theory Colloquia

Member and Past President, Texas Chapter, Alexander v. Humboldt Association of America

Member, Scientific Committee of the International Solvay Institute for Physics and Chemistry

Referee of several journals including Physical Review Letters, Physical Review, Journal of Physics, Journal of Mathematical Physics

LOCAL:

Member, GSC, Physics

Member, Graduate Student Welfare Committee, Physics

ADVISING:

Reader, Member, or Supervisor of 150+ graduate committees since 1968

On going placement of graduates

**SELECTED INVITED LECTURES and CONFERENCE PRESENTATIONS from 2000
to present**

Invited Speaker, “Boundary Conditions, Semigroups and the Quantum Arrow of Time”, XXX International Colloquium on Group-Theoretical Methods in Physics, Ghent, Belgium
19 July 2014

Invited Speaker "The Wigner Medal 2014" J.Avron, A.Bohm, L.S.Schulman (Awarding the Wigner Medal to Joshua Zak, Technion, Haifa, Israel), XXX International Colloquium on Group-Theoretical Methods in Physics, Ghent, Belgium, 20 July 2014

“Hamiltonians with complex Eigenvalues and Time-Asymmetric Evolutions”, Invited Talk, Koc University, Istanbul, 12th Intl. Conference on Pseudo-Hermitian-Hamiltonians, July 6, 2013

"Time Asymmetric Quantum Mechanics" Proceedings of the International Workshop on Symmetries, Special Functions and Superintegrability, University of Valladolid Spain
10 July 2013

“Time evolution of Resonances and Decay and some Remarks about the Z-boson-mass”, Physics Department, Tsinghua University, Beijing, China, Aug. 17, 2012

“Groups or Semigroups for the Dynamical Equations of Quantum Theory” XXIX International Group Theory Colloquium, Nankai University, Tianjin, China, August 20, 2012

“Wigner Medal and Alden Mead’s Gauge Theory of Molecules,” Chern Institute, Nankai University, Tianjin, China, August 12, 2012

“Various Uses of Groups and Semigroups in Quantum Theory”, XXI International Symposium on Jahn-Teller Effect, Tsukuba University, Japan, August 26-31, 2012

“Groups and semigroups in quantum physics” XXX Workshop on Geometric Methods in Physics, Bialowieza, Poland, 26 June-2 July, 2011.

“Time Asymmetry of Quantum Physics” Feza Gursey Institute, Turkish Academy of Sciences, Istanbul Turkey, July 16, 2011.

Five Lectures to the class of the 15 top graduating physics students of Turkey at the Institute of Theoretical and Applied Physics (ITAP), Turunc/Marmaris, Turkey on “Advanced Quantum Mechanics and Applications, July 17-22, 2011.

“Time Asymmetric Quantum Theory” Seminar at ITAP, Marmaris, Turkey, 22 July 2011.

“Time Asymmetric Quantum Theory and two of its predictions”, CINVESTAV-UNAM Symposium on High Energy Physics, Mexico City, Nov. 30-Dec. 1, 2009.

“Time Asymmetric Quantum Theory”, Dept. of Physics, Helwan University, Cairo, June 14, 2010

“Time Asymmetry, Exponential Decay and the Mass Value of the Z-boson”, Center for Theoretical Physics, British University, Cairo, Egypt, June 17, 2010.

“Observing Time Asymmetry of Quantum Physics”, 42nd Symposium on Mathematical Physics
“Quantum Channels Quantum Information-Theory & Applications”, Kopernicus University, Torun, Poland, June 19-22, 2010.

“Recent Advances in Time-Asymmetric Quantum Mechanics, Quantization and Related Topics”
“Manuel Gadella at 60 and 85 Years of Mathematics of Quantum Physics”, University of Valladolid, Spain, July 14-16, 2010.

“Time Asymmetric Quantum Theory” Centro de Ciencia, Benasque, Spain, Workshops:
Supersymmetric Quantum Mechanics and Spectral Design, July 18-30, 2010.

“On the Mathematics of Quantum Physics”, Plenary Talk, 40th Symposium on Mathematical Physics, Torun, Poland, June 2008.

“Time Asymmetric Quantum Theory”, Advanced Study Group Lecture on Time-Quantum and Statistical Mechanics Aspects, Dresden, Germany, July 2008.

“Experimental Observations of a Beginning of Time”, Max Planck Institute, Dresden, Germany July, 2008.

“Semigroups for Resonances and Decay,” XXVI International Colloquium for Group Theoretical Methods in Physics, New York City, Graduate Center, NYU, June 26-30, 2006, U.S.A.

“Time Asymmetric Quantum Theory” XXV Workshop on Geometric Methods in Physics, Bialowieza, Poland, July 2-8, 2006.

“Time Irreversibility in Quantum Theory” Joint Mathematics-Physics Colloquium, Al Azhar University, Cairo, Egypt, July 16, 2006.

“Time Asymmetric Quantum Theory and Experiments,” Physics and Mathematics Development, Helwan University, Cairo, July 17, 2006.

“Two Experiments That Demonstrate Time Asymmetry in Quantum Physics” Theoretical Physics Colloquium, Ulm University, Ulm, Germany, July 25, 2006.

“Theoretical Frame for Relativistic Resonances” Invited Talk at 3rd Symposium on Quantum Theory and Symmetries, University of Cincinnati, Sept.10-14, 2003.

“Time Asymmetric Quantum Mechanics and a Remarkable Experiment that Interprets It”, Statistical Physics Seminar, UT Austin, October 16, 2003.

“Quantum Mechanical Time Asymmetry and Resonances in Atomic Physics”, Three Lectures at the Humboldt Kolleg on Modern Problems in Quantum Physics, Cuernavaca, Mexico, Sept. 27-Oct. 3, 2004.

“Relativistic Time Asymmetry and Resonances”, Seminar, Instituto de Fisica, UNAM Mexico City, October 3, 2004.

“Why Group Theory is the Subject of the Past, XXV International Colloquium on Group Theoretical Methods in Physics, Cocoyoc, Mexico, August 2, 2004.

“Semigroups and Quantum Jump Experiments” 7th Workshop on Time Asymmetric Quantum Theory and Resonances, Mexico City, Mexico, August 5, 2004.

“The Definition of Mass and Width of Relativistic Resonances”, Annual Meeting of the Mexican Physical Society, Playa del Carmen, Mexico, Oct. 30-Nov. 6, 2003.

“Resonances and Time Asymmetric Quantum Theory, “Helwan University, Egypt, June 2, 2003.

“New Axioms of Quantum Mechanics and Time Asymmetry”, Cairo University, Egypt, June 4, 2003.

“Resonance Phenomena and the Z-Boson Mass and Width” Cairo University, Egypt, June 5, 2003.

“Theory of Resonances” Ein Shams University, Egypt, June 7, 2003

“Microphysical Irreversibility and Relativistic Resonances” Solvay Seminar, Brussels University, Belgium, June 10, 2003.

“Theory of Relativistic Resonances” International Workshop on the Theory of Resonances, Instituto Superior Tecnico, Lisbon, Portugal, July 23, 2003

“Quantum Mechanics and Time Asymmetry, Theory Colloquium, University of Ulm, July 31, 2003.

“Time Asymmetric Quantum Theory and the Z-boson Mass and Width” Invited Talk at the Heisenberg Centennial Symposium, Bamberg, Germany, Sept. 26-30, 2001.

“Time Asymmetry Quantum Mechanics” Joint ICTP-DFT Seminar, Trieste, Italy, Oct. 2, 2001.

“Foundations and Applications of Time Asymmetric Quantum Theory”, Invited Talk, XXII Solvay Conference in Physics, Japan, Nov. 24-30, 2001.

“Groups and Semigroups in Scattering Theory”, Invited Talk at the 24th International Colloquium on Groups Theoretical Methods in Physics, , Paris, France, July 1-20, 2002

“Axioms of Quantum Physics and some of their Consequences” Invited Talk at the International Conference on Irreversible Quantum Dynamics, ICTP, Trieste Italy, August 29-Aug.3., 2002

“Time Asymmetric Quantum Theory and Resonances, General Colloquium, Instituto de Fisica, Mexico, March 29, 2000.

“Microphysical Irreversibility”, Week for Physics, Lisbon University, Portugal, May 5, 2000.

“Resonances in Atomic and Particle Physics, Quantum Physics Seminar, University of Ulm, Germany, May 9, 2000.

“Mass and Width of Relativistic Resonances, Seminar, Werner Heisenberg Institute Munich, Germany, May 15, 2000.

“Quantum Theory of Unstable States and Time Asymmetry”, Colloquium, Institute of Theoretical Physics, Wurzburg, Germany, May 15, 2000.

“The Definition of Mass and Width of the Z-boson, Theory Seminar, DESY Zeuthen, Berlin, Germany, May 16, 2000.

“Rigged Hilbert Space and Time Asymmetry, Colloquim Institute of Physics, Kopernicus University, Torun, Poland, May 22, 2000.

“Semigroup Representations of Poincare Transformations and Time Asymmetric Quan Theory, Plenary talk at XXIII ICGTMP, Dubna, Russia, July 31-Aug. 3, 2000

“Relativistic Gamow Vectors and Poincare Semigroup Representations, 3rd Workshop on TAQP and RHSM, Germany, August 9, 2000

“Representations of Groups and Semigroups in Rigged Hilbert Spaces, Lecture Erwin Schrodinger Institute for Mathematical Physics, Vienna, Austria, August 2000

SCIENTIFIC BIBLIOGRAPHY

Arno Bohm - Professor

1. (with M. Polivanov) "On the Product of Wick Polynomials in Quantum Field Theory", *Nuovo Cim.* 40, 1110 (1965).
2. (with H. A. Rashid) "The Effect of the π -Meson in the $J = 1/2$, $T = 1/2$ Pion-Nucleon Scattering Phase Shift", *Phys. Letters* 10, 151 (1964).
3. "Some Problems of Symmetry Breaking", *Nuovo Cim.* 37, 1071 (1965).
4. (with A. O. Barut) "Dynamical Groups and Mass-Formula", *Phys. Rev.* 139, B1107 (1965).
5. "Rigged Hilbert Spaces", Lecture Notes, International Centre for Theoretical Physics Publication No.9 (1964), Trieste.
6. "Dynamical Groups of Simple Nonrelativistic Models", *Nuovo Cim.* 43,665 (1966).
7. "Dynamical Groups and Mass Spectrum", *Phys. Rev.* 145, 1212 (1966).
8. "The Dynamical Group of a Simple Particle Model" in *High Energy and Particle Physics*, p. 327 (1967), Gordon and Breach, Inc. (Proceedings of Boulder Conference, Vol. IX B, Boulder, Colorado, 1966).
9. "Rigged Hilbert Space and Mathematical Description of Physical Systems", in *Mathematical Methods of Particle Physics*, A, p. 255 (1967), Gordon and Breach, Inc. (Proceedings of Boulder Summer School, Vol. IX A, Boulder, Colorado, 1966).
10. "An Associative Algebra in the Problem of Mass Formulas", *J. Math. Phys.* 8, 1551 (1967).
11. (with N. Mukunda and E. C. G. Sudarshan) "Relativistic Particle Spectra and Mass Splittings", *Phys. Letters* 24B, 301.
12. "Mass Formula and 'Broken SU(3)' in an Associative Algebra", *Phys. Rev.* 158, 1408.
13. (with L. O'Raiheartaigh) "Some Mass-Splitting Theorems for General Definitions of Mass", *Phys. Rev.* 171,1698 (1968).
14. "The Algebraic Method and Infinite Component Wave Equations", *Lecture in Theoretical Physics XB* (1967), Gordon and Breach (1968).
15. "On the Derivation of the Mass and Spin Spectrum for Mesons and Baryons", *Phys. Rev.* 175, 1767 (1968).
16. (with E. C. G. Sudarshan) "Can Infinite Multiplets be Inferred from the Weak Decay Rates?" *Phys. Rev.* 178, 2264 (1969).
17. (with E. C. G. Sudarshan) "An Associative Algebraic Model for Weak Meson Decays", *Nuovo Cim.* 60, 395 (1969).
18. (with E. C. G. Sudarshan) "Kg-Decay in an Algebraic Model for Mesons", *Phys. Rev.* 182,1918 (1969).
19. "Fine Structure in the Meson Spectrum", *Phys. Rev. Lett.* 23,436 (1969).

20. "Infinite Multiplets and the Meson Spectrum", Proceedings of the International Conference on Symmetries and Quark Models (1969), R. Chand, ed., Gordon and Breach (1970), p. 81.
21. (with G. B. Mainland) "Dirac Representation of the Relativistic Symmetry", Fortsch. Phys. 18, 285 (1970).
22. "Infinite Dimensional Generalizations of the Dirac Representation", Phys. Rev. D3, 367 (1971).
23. "Symmetry Breaking in Representations of the Relativistic Symmetry", Phys. Rev. D3, 377 (1971).
24. (with G. B. Mainland) "Meson and Baryon Semi-leptonic Decay", Phys. Rev. D2, 919 (1970).
25. (with A. O. Barut) "Reduction of a Class of $S_0(4,2)$ Representations with Respect to $S_0(4,1)$ and $SO(3,2)$ ", J. Math. Phys. 11, 2938 (1970).
26. "A2' in De Sitter and Conformal Groups and their Applications A.O. Barut, ed., Colorado University Press (1971), p. 36, and "An Algebraic Description of the Particles Spectrum".
27. "Generalized Eigenvectors and Group Representations" in Studies in Mathematical Physics (Proceedings of the Istanbul Summer Institute), D. Reidel Pub. Co. (1973).
28. (with G. B. Mainland) "Transition Operators in an Algebraic Model for Hadrons", Phys. Rev. D5, 872 (1972).
29. "Leptonic Decay of Vector Mesons in an Algebraic Model for Hadrons", Phys. Rev. D7, 2101 (1973).
30. (with J. S. Nilsson) "Radiative Decay of Vector Mesons in an Algebraic Model for Hadrons", Phys. Rev. D8, 207 (1973).
31. (with G. B. Mainland) "Generalizations of the Dirac Equation", Nuovo Cim. 18A, N. 2 (1973).
32. "Some Theoretical Considerations about the K_s and Hyperon Semileptonic Decays", Nuovo Cim. 11, 13 (1974).
33. "Quantum Mechanics in Particle Physics", Proceedings of the Mathematical Physics Symposium, Warsaw (1974).
34. "Poincare Group, $SU(3)$ and V-A in Leptonic Decay", Phys. Rev. D13, 2110 (1976).
35. (with **R. B. Teese**) "Spectrum Generating Group of the Symmetric Top Molecule", J. Math. Phys. 17, 94 (1976).
36. "Can Semi-Leptonic Decay Data Provide Information about the Relations between Poincare Group and $SU(3)$?" Neutrino '75 (Proceedings Vth International Conference on Neutrino Science, Vol. II, p. 319), A. Frenkel, G. Marx, eds., Budapest (1975).
37. (with J. Werle) " $SU(3)$ as Spectrum Generating Group and Leptonic and SemiLeptonic Decay of Mesons", Nucl. Phys. B106, 165 (1976).
38. (with **R. B. Teese**, A. Garcia, Jan S. Nilsson) "Pseudo-Tensor Formfactors in Hyperon Decays as a Consequence of the Relation between $SU(3)$ and the Poincare Group", Phys. Rev. D15, 689 (1977).
39. (with **R. B. Teese**) "Matrix Elements of Vector and Axialvector Operators in an Algebraic Formulation of Baryon Decays", J. Math. Phys. 18, 1434 (1977).
40. "Relativistic Rotators-A Quantum Mechanical De Sitter Bundle", Proc. of the International Symposium on Math. Phys., Mexico City (Jan. 1976), p. 377.

41. (with M. Igarashi and J. Werle) "SU(3) Symmetry in Leptonic Decays of Pseudoscalar Mesons", Proc. International Symposium on Math. Phys., Mexico City, Jan. 1976, p. 421.
42. (with A. Garcia and **R. B. Teese**) "Hyperon Decays and Spectrum Generating SU(3)", Proc. International Symposium on Math. Phys., Mexico City (Jan. 1976), p. 403.
43. "Spectrum Generating $SU(3)$ and $SU(4)$ and the Leptonic Decays of $p, w, \rho, J/\psi$ ", Phys. Rev. D13,2656 (1976).
44. (with M. Hossain, B. A. Kagali, P. Moylan, **R. B. Teese**, P.M. Valanju) "Radiative Decay of the J(W) and Other Vector Mesons in SU(4)", Phys. Rev. D15,348 (1977).
45. (with M. Igarashi and J. Werle) "The SU(3)E Invariant Formfactor for Pseudo-scalar Mesons", Phys. Rev. D15,2461 (1977).
46. (with **R. B. Teese**) " $D^{*0} \rightarrow D^0 \gamma$ and Other Radiative Decays of Vector Mesons", Phys. Rev. Lett., 38,629 (1977).
47. "A Generalization of the Electromagnetic Current Operator", Phys. Rev. D17,3127 (1978).
48. (with M. Hossain and **R. B. Teese**) "Spectrum Generating SU(4) in Particle Physics I: SU(n) and Particle Assignment", Phys. Rev. D18,248 (1978).
49. "The Hyperon Magnetic Moments in SU(3)", Phys. Rev. D18,2547 (1978).
50. (with **R. B. Teese**) "Arguments concerning an SU(3)-scalar term in the electromagnetic current operator and the value for $F(p \rightarrow \pi^0 \gamma)$ ", Phys. Rev. D18, 330 (1978).
51. (with **R. B. Teese**) "Spectrum Generating $SU(4)$ in Particle Physics II. Decays of Vector Mesons", Phys. Rev. D18, 4178 (1978).
52. *Rigged Hilbert Space in Quantum Mechanics*, Lecture Notes in Physics Vol. 78 Springer Verlag, Heidelberg, (1978).
53. (with **R B. Teese**) "Idea and Application of Spectrum Generating $SU(3)$ and $SU(4)$ " in *Group Theoretical Methods in Physics*, W. Beiglbock et al., eds., Springer Lecture Notes in Physics, Vol. 94 (1979) p. 301.
54. *Quantum Mechanics*, Springer Verlag, New York (1979).
55. "The Rigged Hilbert Space and Decaying States", Proceedings of the 7th International Group Theory Colloquium (1978). Springer Lecture Notes in Physics, Vol. 94 (1979), p. 245.
56. (with **R B. Teese**) " $SU(3)$ and $SU(4)$ as Spectrum Generating Groups", Proceedings of the Conference on Mathematical Methods in Physics, Clausthal, Germany, Springer Lecture Notes in Physics (1980).
57. (with W. Beiglbock, E. Takasugi) "Group Theoretical Methods in Physics", Springer Lecture Notes in Physics, Vol. 94 (1979).
58. (with **R B. Teese**) "Addendum to Arguments concerning an SU(3) scalar term in the electromagnetic current operator", Phys. Rev. D20, 1738 (1979).
59. "DeSitter Fibers and SO(3,2) Spectrum Generating Group for Hadrons" Proceedings of the Einstein Centennial Symposium, Carbondale, Ill. (1979) in *Symmetries in Science*, B. Gruber, et al., ed., Plenum Press (1980), p. 73.
60. "SO(4,1) as Structure Group of a Fibre Bundle and SO(3,2) as a Relativistic Spectrum-Generating

Group", Proceedings of Conference on Group Theoretical Methods in Physics, Zvenigorod, USSR (1980).

61. "Gamow State Vectors as Functionals over Subspaces of the Nuclear Space" , Letters in Math. Phys. 3,455 (1979).

62. "Decaying states in the rigged Hilbert Space Formulation of Quantum Mechanics", J. Math. Phys. 21, 1040 (1980).

63. "New experimental evidence for a new interpretation of flavor $SU(3)$ " , Proceedings of the 9th International Colloquium on Group Theoretical Methods in Physics, Cocoyoc, Mexico (1980).

64. (with P. Kielanowski) "Fits of the Hyperon Semileptonic Decay Data and Spectrum Generating $SU(3)_I$ ", Phys. Rev. D27, 166 (1983).

65. (with **R. B. Teese**) "Fits of the Baryon Magnetic Moments", Lett. al Nuovo Cim. 32, 122 (1981).

66. "Resonance Poles and Gamow Vectors in the Rigged Hilbert Space Formulation of Quantum Mechanics", J. Math. Phys. 22,2813 (1981).

67. (with RB. Teese) "Fits of the Baryon Magnetic Moments to the Quark Model and Spectrum Generating $SU(3)$ ", Phys. Rev. D26, 1103 (1982).

68. "Fits of Hyperon Data" in Problems of High Energy Physics, A.A. Logunov, ed., Protvino, SSSR (1981), p. 188.

69. (with A. Garcia and P. Kielanowski) "The Electron Asymmetry in $E \rightarrow \nu e$ and Second Class Currents", Phys. Lett. 113B, 272 (1982).

70. (with A. Garcia, P. Kielanowski and P. Magnolay) "Fits of the Hyperon Semileptonic Decay Data and Spectrum Generating $SU(3)_I$ ", Phys. Rev. D27,180 (1983).

71. (with P. Kielanowski) "Fits Combining Hyperon semileptonic decays, magnetic moments, and the conserved-vector-current hypotheses", Phys. Rev. D27,2758 (1983).

72. (with **R. R. Aldinger**) "Examples of Group Contraction" in Group Theoretical Methods in Physics, M. Serdaroglu and E. Inonu, eds., Springer Lecture Notes in Physics Vol. 180 (1983).

73. (with **R. R. Aldinger**, P. Kielanowski, M. Loewe, P. Magnolay, N. Mukunda, W. Drechsler, S. R. Komy) "The Relativistic Rotator, I. Quantum Observables and Constrained Hamiltonian Mechanics", Phys. Rev. D28,3020 (1983).

74. (with A. Shabat) "Hadronic Rotational Bands and Constraint Hamiltonian Mechanics of the Quantum Relativistic Rotator" , Proceedings of Conference on Group Theoretical Methods in Physics, M. A. Markov et al., eds., Academic Publication, London (1986).

75. (with M. Loewe, L. C. Biedenharn, H. van Dam) "The Relativistic Rotator II. The Simplest Representation Spaces", Phys. Rev. D28,3032 (1983).

76. Decaying States and the Rigged Hilbert Space Formulation of Quantum Mechanics, Mathematical Physics VII (International Congress on Mathematical Physics, Boulder Colorado 1983, p. 103), W. E. Brittin et al., eds., North-Holland Physics Publishing (1984).

77. (with P. Kielanowski and A. Garcia) "Consistency Between Two Recent Experiments on $E \rightarrow \nu e$ ", Phys. Rev. D30,231, (1984).

78. (with **R. R. Aldinger**, P. Kielanowski, M. Loewe and P. Moylan) "The Relativistic Rotator III", Phys. Rev. D29,2828 (1984).

79. (with L. C. Biedenharn, M. Tarlini, H. van Dam and N. Mukunda) "On the Spinorial Relativistic Rotator: The Transformation from Quasi-Newtonian to Minkowski Coordinates", Phys. Rev. D30,409 (1984).
80. (with M. Loewe, P. Magnollay, M. Tarlini, **R. R. Aldinger**, P. Kielanowski) "New Relativistic generalizations of the Heisenberg Commutation Relations", Phys. Rev. Lett. 53, 2292 (1984).
81. (with P. Moylan) "On the integrability of certain symmetric representations of the Lie algebra of $SO(4, 1)$ ", J. Math. Phys. 26, 365 (1985).
82. Addendum to The Beta Decay of Hyperons (A. Garcia and P. Kielanowski), Lecture Notes in Physics, Vol. 222, Springer Verlag (1985), p. 169.
83. (with M. Loewe and P. Magnollay) "Quantum Relativistic Oscillator. Modifying the Hamiltonian formalism of the relativistic string", Phys. Rev. D31, 2304 (1985).
84. (with M. Kmiecik) "On the new value for the electron asymmetry in $E^- \rightarrow \nu_e$ and hyperon semileptonic decays", Phys. Rev. D31, 3005 (1985).
85. (with M. Loewe and P. Magnollay) "The Quantum Relativistic Oscillator II. Non- relativistic Limit and Phenomenological Justification", Phys. Rev. D32, 791 (1985).
86. (with M. Loewe, P. Magnollay, M. Tarlini, **R. R. Aldinger**, L.C. Biedenharn H. van Dam) "The Quantal Relativistic Oscillator III. Contraction between Algebras of $so(3,2)$ and the Three-dimensional Harmonic Oscillator", Phys. Rev. D32, 2828 (1985).
87. (with A. Garcia, P. Kielanowski, M. Kmiecik, **R. B. Teese**) "The Values of $E^- \rightarrow \nu_e$ Decay Parameters and the Theory of Hyperon Semileptonic Decays", Revista Mexicana de Fisica 31, 361 (1985).
88. (with Y. Ne'eman) "Twenty Years of Dynamical Groups and Spectrum Generating Algebras", Proceedings of the IIIrd International Seminar on Group Theoretical Methods in Physics, Nauka, Moscow (1986), p. 479.
89. " $SO(3,2)$ Multiplets and $Osp(1,4)$ Supermultiplets of Hadron Resonances", Proceedings of the Warsaw Symposium on Elementary Particle Physics Z. Ajduk, S. Pokorski, eds., Warsaw (1985) .
90. Quantum Mechanics-Foundations and Applications, 2nd revised and enlarged edition, Springer, New York (November 1985).
91. "Possible evidence for Dynamical Supersymmetry in the Hadron Spectrum", Phys. Rev. D33, 3358 (1986).
92. "Quantum Mechanics and Spectrum Generating Groups and Supergroups", Proceedings of Symmetries in Science II, B. Gruber et al., eds., Plenum Press, New York (1987).
93. "The Algebraic Method and Relativistic Superconformal Quantum Mechanics", Proceedings of the XV International Conference on Differential Geometric Methods in Theoretical Physics, p. 317, **H. D. Doebner** et al., eds., World Scientific Publishing Co. (1986).
94. "Superconformal Algebra and Relativistic Supersymmetric Quantum Mechanics, Proceedings of VIIIth International Congress on Mathematical Physics, Marseilles, p. 638; M. Mebkhout, R. Seneor, eds., World Scientific (1987).
95. "Spectrum Supersymmetry of Regge Trajectories", Phys. Rev. Letters 57,1203 (1986).
- 96 (with L. J. Boya, M. Kmiecik) "Calculations with Supersymmetric Potentials", Phys. Rev. D35,1255 (1987).

97. (with M. Loewe, P. Magnollay) "The Algebraic Method for Relativistic Systems and Radiative Transitions", Group Theoretical Methods in Physics, Vol. XV, R. Gilmore, ed., World Scientific (1987).
98. (with L. J. Boya, M. Kmiecik) "Representation Theory of Superconformal Quantum Mechanics", J. Math. Phys. 29,1163 (1988).
99. (with P. Kielanowski, M. Kmiecik, M. Loewe) "Strings and other Extended Objects" in Problems on High Energy Physics and Field Theory, M. V. Saveliev, ed., Nauka Publisher, Moscow (1988).
100. (with L. J. Boya, P. Kielanowski, M. Kmiecik, M. Loewe, P. Magnollay) "Theory of Relativistic Extended Objects", Int. J. Mod. Phys. A3,1103 (1988).
101. (with P. Kielanowski, M. Kmiecik, M. Loewe) "Relativistic Spectrum Generating Groups: Spectrum and Radiative Transitions in a Collective Model for Hadrons" in Group Theoretical Methods in Physics (Proceedings of the XVI International Colloquium 1987), Varna, Bulgaria.
102. (with L. J. Boya, M. Kmiecik) "The Hydrogen Atom in One Dimension", Phys. Rev. A37,3567 (1988).
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