S. Wickramasekara

Curriculum Vitae

The University of Texas at Austin
Physics Department
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Education

Ph.D., Physics, The University of Texas at Austin — Dec 1999
Dissertation: *Differentiable Representations of Finite Dimensional Lie Groups in Rigged Hilbert Spaces*
Supervisor: Arno Bohm

B.S. (*Summa Cum Laude*), Physics, The University of Southern California — May 1993

Research Interests and Expertise

Theoretical physics, quantum field theory, relativistic resonances, phenomenology of the Z-boson;
Functional and harmonic Analysis, $\mathcal{H}^p$ – spaces, representations of groups and semigroups, measure theory, distributions and test function spaces;
Foundations of quantum physics
(A detailed research statement is available upon request.)

Professional Experience

- Postdoctoral Fellow and Lecturer
  Department of Physics, The University of Texas at Austin — Feb 2000-Present
- Co-Director, Conference on Irreversible Quantum Dynamics
  International Center for Theoretical Physics, Trieste, Italy — July/Aug 2002
- Visiting Scientist, Erwin Schroedinger Institute, Austria — Aug 2000
- Assistant Instructor, Department of Physics, The University of Texas at Austin
  (Taught Physical Science 303 and 304) — Several Semesters
- Graduate Research Assistant, Center for Particle Theory, The University of Texas at Austin
  (On a grant from Welch Foundation) — Several Semesters
- Teaching Assistant, Department of Physics,
  The University of Texas at Austin — Several Semesters

Awards and Honors

- Nominee, The Hermann Weyl Prize in Mathematical Physics — 2002
- The Excellence in Teaching Award for a Teaching Assistant, — 1999
  Honorary Recognition, The University of Texas at Austin
- Tuition Fellowship, The University of Texas at Austin — Summer 1997/99
- Member, Sigma Xi Scientific Research Society
- The Trustee Scholarship, The University of Southern California — 1990-1993

Publications

List Attached

Invited Lectures and Conference Presentations

- *SO(3,2) as a Spectrum Generating Group*
  XXI International Colloquium on Group Theoretical Methods in Physics,
  Goslar, Germany, July 1996.

- *Relativistic Spectrum Generating Groups and Collective Models of Hadrons*
  IX International Symposium on Symmetries in Science, Bregenz, Austria, August 1996.
- *The Formalism of Spectrum Generating Groups*
  Summer School on ``Present Problems in Quantum Mechanics,'' Peyresq, France, July 1996.
- *Lie Group Representations in Rigged Hilbert Spaces*
  Guest Lecture at Dept. de Mathematicas, Centro de Investigacion del IPN Mexico City, Mexico, November 1999.
- *Relativistic Gamow Vectors from Poincare Semigroups*
  Guest Lecture at Dept. de Fisica, Centro de Investigacion del IPN, Mexico City, Mexico, November 1999.
- *Representation of Groups and Semigroups in Rigged Hilbert Spaces I and II*
  Guest Lectures at Erwin Schroedinger Institute, Vienna, Austria, August 2000.
- *Integrability of Operator Lie Algebras in Rigged Hilbert Spaces*
  Fourth annual Workshop on Time Asymmetric Quantum Theory, Clausthal, Germany, July 2001.
- *A Group Theoretical Characterization of Unstable Particles*
  Guest Lecture at Dept. of Physics, University of Peradeniya, Sri Lanka, August 2001.

Teaching (At the University of Texas at Austin)

- Taught a variety of physics courses, both upper and lower division, for science and non-science majors.
- As a Teaching Assistant, graded and conducted discussions for both graduate and undergraduate courses intended for physics majors.
  (Statements on teaching philosophy and experience as well as student evaluations are available upon request.)

Service

- Referee for several journals, including Physical Review Letters, Physical Review A, Journal of Mathematical Physics and Nuclear Physics A.
- Referee for the International Center for Theoretical Physics, Trieste, Italy.

References

1. Prof. Arno Bohm
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2. Prof. Yuval Ne'eman
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3. Prof. Manuel Gadella
   Facultad de Ciencias
   Universidad de Valladolid, E-47011
   Valladolid, Spain
   gadella@wamba.cpd.uva.es

4. Prof. Piotr Kielanowski
   Departamento de Fisica
   CINVESTAV del IPN
   Mexico City, Mexico
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5. Prof. Austin Gleeson (On Teaching)
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6. M. E. L. Oakes (On teaching)
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List of Publications

Refereed Journals

1. *Interior Symmetries of Hadrons: SO(3,2) as a Spectrum Generating Group*
   Intern. J. of Theor. Phys. **36** (1997) 2409.

2. *The Time Reversal Operator for Semigroup Evolution* (with A. Bohm)
   Found. of Phys. **27** (1997) 969.

3. *Semigroup Representations of the Poincare Group and Relativistic Gamow Vectors*
   (with A. Bohm, H. Kaldass and P. Kielanowski)
   Phys. Lett. A **264** (2000) 425.

4. *Time Asymmetric Quantum Theory and the Ambiguity of the Z-boson Mass and Width*
   (with A. Bohm, N. L. Harshman and H. Kaldass)
   Eur. Phys. J. C **18** (2001) 333.

5. *A Note on the Topology of Space-time in Special Relativity*
   Class. Quantum Grav. **18** (2001) 5353.

6. *Symmetry Representations in the Rigged Hilbert Space Formulation of Quantum Mechanics*
   (with A. Bohm)
   J. Phys. A: Math. Gen. **35** (2002) 805.

7. *Resonance States from Poles of the Relativistic $\mathcal{S}$-Matrix* (with A. Bohm and H. Kaldass)
   Intern. J. Mod. Phys. A **17** (2002) 3749.

8. *On Einstein Causality and Time Asymmetry in Quantum Physics* (with A. Bohm)
   J. Phys. A: Math. Gen. **35** (2002) L715.

9. *Representation of Semigroups in Rigged Hilbert Spaces: Subsemigroups of the Weyl-Heisenberg Group*
   (with A. Bohm)
   J. Math. Phys. **44** (2003) 930.

10. *Relativistic Resonances and Decay I: Gamow Vectors from S-Matrix Poles* (with A. Bohm and H. Kaldass)
    Fortschr. Phys. **51** (2003) To Appear

11. *Relativistic Resonances and Decay II: Gamow Vectors and the Causal Poincare Semigroup*
    (with A. Bohm and H. Kaldass)
    Fortschr. Phys. **51** (2003) To Appear

12. *On the Observables and Semigroup Transformations in Quantum Physics*
    Preprint, University of Texas at Austin

13. *Differentiable Representations of the Causal Poincare Semigroup*
    Preprint, University of Texas at Austin

Invited, Refereed Papers

14. *Some Little Things about Rigged Hilbert Spaces and Quantum Mechanics* (with A. Bohm and M. Gadella) in Generalized functions, operator theory and dynamical systems, Chapman and Hall/CRC Research Notes in Mathematics, 399, I. Antoniou and G. Lumer (Eds.).

15. *A New Topology for an Axiom of Quantum Mechanics* (with A. Bohm) To appear in the Lecture Notes for the Conference on Irreversible Quantum Dynamics, Trieste, Italy, 2002.

Conference Proceedings

16. *Group Theory and the Hadron Spectrum* (with A. Bohm) A. O. Barut Memorial Lectures, Published in Turkish Journal of Physics **21** (1997) 289.

17. *SO(3,2) as a Spectrum Generating Group for a Collective Model of Hadron Structure* Group 21, Physical Applications and Mathematical Aspects of Geometry, Groups, and Algebras, V. II; H. D. Doebner, W. Scherer, and C. Schulte (Eds.)

18. *Resonances, Gamow Vectors and Time Asymmetric Quantum Theory* (with A. Bohm and R. Scurek) Rev. Mexi. de Fisica, **45** (1999) 16.