

CURRICULUM VITAE (Resume), 2014

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WORKING EXPERIENCE

Aug. 2010 – Present
Physics Instructor
Colorado Mesa University

Jan. 2002 – July 2010
Physics Instructor
Dine College

Feb. 2001 - Dec. 2001
Supervisor of the Test Development Group
Wolfram Research (the creators of Mathematica)

Nov. 1997 - Feb. 2001
Lead Software Quality Assurance Engineer, Wolfram Research.

Oct. 1989 - Oct. 1997
Researcher, High Energy Physics Group and Computer
Support, Scientific Computing Section.
International Centre for Theoretical Physics
Trieste
Italy

-Postdoctoral-

Nov. 1988 - Oct. 1989

NSERC
Postdoctoral Fellow
Department of Physics
University of Waterloo
Waterloo, Ontario
Canada

Jan. 1987 - Nov. 1988

Postdoctoral Fellow
High Energy Physics Group
International Centre for Theoretical Physics
Trieste
Italy
(1987: under scholarship from the Royal Society, London;
1988: under support from ICTP)

UNIVERSITY EDUCATION

Ph.D. 1983-86 Theoretical Physics

Imperial College, London University, London, England
Thesis title: Topics in Path Integration
(Supervisor: Professor C. J. Isham)

D.I.C. 1983-84 Mathematical Physics

(Diploma of Imperial College, Master's equivalent)
Imperial College, London University, London, England

B.Sc. 1980-83 Physics with First Class Honors (~top 5%)

Imperial College, London University, London, England

B.Sc. 1977-80 Mechanical Engineering with First Class Honors (~top 5%)

Imperial College, London University, London, England

AWARDS, RECOGNITION and SCHOLARSHIPS

2000

Recognized by the U.S. government as an alien of extraordinary ability.

1988-1989

NSERC (National Science and Engineering Research Council, Canada)
postdoctoral fellowship

1986-1987

Royal Society postdoctoral fellowship

1983-1985

SERC (Science and Engineering Research Council, England)
postgraduate grant

1977-1980

SERC (British) undergraduate grant

ASSOCIATESHIPS

Associate of the City and Guilds Institute
Associate of the Royal College of Science

SIDE INVOLVEMENTS

Academic

2003

Proposed, designed and built a Wi-Fi system for Dine College campus (included the construction of a 30' repeater tower)

1986

Set up and taught a microprocessor laboratory project for final year undergraduate students at Imperial College, London, England.

Industrial

1999

Helped the company 'Always Thinking' get the X10 software 'Thinking Home' working on the Mac for the X10 radio transmitter.

1995

Wrote a couple of articles for the New Gale Encyclopedia of science.

SUMMARY

Research in Theoretical Physics

My research is focused on mathematical methods in physics.

ICTP (International Center for Theoretical Physics)

Worked part time supporting the scientists, specializing in computer algebra support; hence the natural move to Wolfram Research when entering industry.

Wolfram Research, Inc.

Spent the 4 years earning my Green Card as a Lead Engineer in the Software Quantity Assurance department, where my knowledge of mathematics was usefully employed. Developed and documented internal quality assurance procedures on the internal Web site. Did some programming and research that shipped with the then current version.

Supervised a small team (about half a dozen people) that composed the test development group.

PUBLICATIONS over 300 citations altogether (<http://scholar.google.com/>)

- * *Approaching the event horizon of a black hole.*
Adv. Studies Theor. Phys., Vol. 6, 2012, no. 23
{arXiv:1209.2113}
- * *Operator Regularization of Feynman Diagrams at multi-loop order.*
Can. J. Phys., 89, 1149, 2011
{arXiv:1006.1806}
- * *Operator Regularization of Feynman Diagrams at one-loop order.*
Can. J. Phys., 89, 289, 2011
{arXiv:1006.1806}
- * *Quantum Destructive Interference.*
Electr. Jour. of Theor. Phys., 19, 43, 2008
[arXiv:0808.1139]
- * *Reply to 'On a recent proposal of faster than light quantum communication'.*
Electr. Jour. of Theor. Phys., 18, 109, 2008
[arXiv:0801.0099]
- * *Faster than light quantum communication.*
Electr. Jour. of Theor. Phys., 18, 105, 2008
[arXiv:0710.1367]
- * *The Quantum Interference Computer: error correction and an experimental proposal.*
Int. Jour. of Theo. Phys., 47, 2176, 2008
[arXiv:quant-ph/0611052], [arXiv:0704.2033]
- * *A Review of Leading Quantum Gravitational Corrections to Newtonian Gravity.*
(with Arif Akhundov)
Electr. Jour. of Theor. Phys., 17, 1, 2008
[arXiv:gr-qc/0611091]
- * *The Role of Quantum Interference in Quantum Computing.*
Int. Jour. of Theo. Phys., 45, 1653, 2006.
[arXiv:cs.CC/0507003]

GAP

This gap in the publication list was when in industry (to earn the Green-Card).

GAP

- * *Gravitational interaction to one loop in effective quantum gravity.*
(with Stefano Bellucci and Arif Akhundov)
Phys. Letts. B, 395 (1997) 16.
- * *Gravity Quantized (The High Tension String).*
(with Stefano Bellucci)
Invited plenary talk at the XX International Workshop on
High Energy Physics and Field Theory, Protvino, Russia, June 1997.
Eds. I.V. Filimonova and V.A. Petrov
(Published in the proceedings, page 130-)
[arXiv:gr-qc/9701065]

- * *Can the Equivalence Principle Survive Quantization?*
 Invited plenary talk at the International Workshop on AntiMatter,
 Gravity and AntiHydrogen Spectroscopy, Molise, Italy, May 1996.
 (Published in the proceedings)
 Hyperfine Interactions 109 (1997) 105-
 [arXiv:gr-qc/9606007]
- * *Is there no quantum form of Einstein Gravity?*
 Invited plenary review at the XIX International Workshop on
 High Energy Physics and Field Theory, Protvino, Russia, June 1996.
 Eds. V.A. Petrov, A.P. Samokhin and R.N. Rogalyov
 (Published in the proceedings, page 171-).
 [arXiv:gr-qc/9607005]
- * *Quantizing Orthodox Gravity.*
 Can. J. Phys., 74, 172, 1996.
 [arXiv:hep-th/9307100]
- * *Quantum Canonical Transformations. Consistent quantization and the Path Integral.*
 Invited talk at the XVIII International Workshop on
 High Energy Physics and Field Theory, Protvino, Russia, June 1995.
 Eds. V.A. Petrov, A.P. Samokhin and R.N. Rogalyov
 (published in the proceedings, page 311-).
- * *Quantum Canonical Transformations revisited.*
 J. Math. Phys., 36, 6681, 1995.
 [arXiv:hep-th/9411199]
- * *The Perturbative Quantization of Gravity.*
 Invited talk at the Poincare conference in Protvino, Summer 1994.
 Problems in High Energy Physics and Field Theory,
 Proceedings of the XVII workshop,
 Eds. A.P Samokhin and G.L. Rcheulishvili.
 (published in the proceedings, page 156-).
 [arXiv:hep-th/9407159]
- * *Finite Massless Quantum Field Theory.*
 Can. J. Phys., 70, 463, 1992.
- * *Does Nature place a Fundamental Limit on Strength?*
 Can. J. Phys., 70, 458, 1992.
- * *Deriving the Path Integral from the Operator Formalism*
 (a new view on an old problem).
 Lectures on Path Integration: Trieste 1991,
 Eds. H. Cerdeira et al., World Scientific, 1993, p 563-.
- * *Force on a Charged Particle Orbiting Around a Kerr-Newman Black Hole.*
 (with S. Chakrabarti)
 Proceedings of the Sixth Marcel Grossmann meeting on
 General Relativity, Kyoto 1991,
 Eds. Humitaka Sato and Takashi Nakamura,
 World Scientific, 1992, p 1360-.
 [arXiv:astro-ph/9211005]

- * *Information Loss down a Black Hole.*
(with S.C.Lee)
Gen. Rel. Grav., 23, 81, Jan, 1991.
- * *Classical and Quantum Properties of Two-Dimensional Black Holes.*
(with R.B. Mann and L. Tarasov)
Nucl. Phys. B., 341, 134, Sept, 1990.
- * *Zeta-Function Regularization of Quantum Field Theory.*
Can. J. Phys., 68, 620, July-August, 1990.
- * *Deriving the path integral from the operator formalism.*
Can. J. Phys., 68, 428, April-May, 1990.
- * *The trivialization of constraints in quantum theory.*
J. Math. Phys., 31, 76, Jan, 1990.
- * *Canonical Transformations in Quantum Mechanics, (a canonically invariant path integral).*
J. Math. Phys., 29, 913, 1988.
- * *Wedges I.*
(with C. DeWitt-Morette, S. G. Low, and L. S. Schulman)
Found. Phys., 16, 311, 1986, a festschrift for J. Wheeler.
- * *Calculation of Non-relativistic scattering of Charged scalar particles from a classical Aharonov-Bohm solenoid without an Explicit Gauge Choice, (a canonically invariant path integral).*
Ann. Phys., 166, 299, 1986.

COURSES TAUGHT

*** Physics**

Modern Optics
Calculus based Physics (University Physics)
Algebra based Physics (College Physics)
Introduction to Astronomy
Survey of Physics

*** Engineering**

Introduction to Engineering

*** Mathematics**

Calculus
Pre-Calculus
Discrete Mathematics
Algebra
Developmental mathematics

*** Computing**

Computer Algebra/Mathematics
LaTeX typesetting
Developed a microprocessor Lab for Physics students