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EDUCATION

1994 Ph.D. Physics UC Los Angeles Hadronization and Strange Hadron Production in e+e- at 30GeV
1989 M.S. Physics UC Los Angeles High Energy Physics
elective coursework: field theory at UC Los Angeles and general relativity at UC Berkeley with Bruno Zumino
1987 B.S. Physics UC San Diego Physics, minors in Mathematics and Metaphysics/Epistemology
advanced study in astrophysics: 1 year coursework, field work at Lick Observatory (advisor: H.E. Smith)

POSITIONS

2010-2011 University of Washington Physics Visiting Lecturer
2010 UC Irvine, NSF grant #0701707 Acting Principal Investigator, May-November
2004-present UC Irvine Physics & Astronomy Associate Project Scientist
2007-2009 University of Washington Physics Visiting Scholar
2005 UC Irvine Physics & Astronomy Summer Sessions Lecturer: Intro. Mechanics
2001-2004 UC Irvine Physics & Astronomy Postdoctoral Researcher
2000-present Zinfinite Solutions Information Technologies Consultant
1997-2001 General Dynamics (Veridian) Communication Systems Engineer
1995-1996 UC San Diego Physics Postgraduate Researcher
1994-1995 Strategic Economic Decisions Consultant, Theoretical Physics
1994-1995 UC Los Angeles Physics Staff Research Associate
1988-1994 UC Los Angeles Physics Graduate Student Researcher
1990-1992 Stanford University Visiting Scholar
1987-1988 UC Los Angeles Physics Teaching Assistant: Intro. Electromagnetism, Particle Physics Lab
1986-1987 UC San Diego Physics Teaching Assistant: Intro. Astronomy, Intro. Electromagnetism Lab

AFFILIATIONS

1990-present American Physical Society
1997-2001 United States Government security clearance (top secret)
1990-1995 TPC/Two-Gamma collaboration at Stanford Linear Accelerator Center

PRESENTATIONS

2008 speaker at the Conference on Precision Electromagnetic Measurements Denver, CO, USA
2004 speaker at the Conference on Precision Electromagnetic Measurements London, UK
2003 speaker at the Tenth Marcel Grossmann Meeting on General Relativity Rio de Janeiro, Brazil
2003 speaker at the Pacific Coast Gravity Meeting Salt Lake City, UT, USA

SKILLS

Metrology: mechanical/optical ~0.1 μm level (7 years)
Cryogenics and plumbing: liquid nitrogen/helium, dilution refrigeration (9 years)
Vacuum systems to $<10^{-6}$ mBar (9 years)
Programming (e.g. Labview, Visual Basic, Mathematica, Fortran) (23 years)
Electronics: design/assembly of digital/analog low/high voltage data acquisition/control systems (23 years)
Personal computer systems, networks and databases (13 years)
Machine shop (7 years)
Torsion pendulums: support fibers, optical levers, multipole design (8 years)
Particle detectors: scintillators, drift/spark chambers (5 years)

OTHER INTERESTS

Fundamental forces, General Relativity, Quantum Interpretation
Low Temperature and BEC phenomena
Sociology and Nuclear Disarmament, Philosophy and History of Science
Consciousness and Medical Imaging Technologies

RESEARCH

- 2001-present Precision gravity tests with cryogenic torsion pendulums:
- measurement of Newton's constant G
 - test of the inverse-square law
 - test of the weak equivalence principle
- Riley D. Newman, UC Irvine.
Paul Boynton, University of Washington Seattle (collaborator)
Experiment Site: Battelle Gravitation Physics Laboratory, Hanford, WA (with Pacific Northwest National Lab)
- 1997-2001 LF/VLF/ELF radio transmitter system design and support, including:
- dual-antenna intermodulation distortion study for the US Navy in Cutler, ME
 - antenna bushing SF_6 insulating gas study for the US Navy in San Diego, CA
 - control system design and programming for the NIST time broadcast (WWVB) in Fort Collins, CO
 - antenna and transmitter monitor systems development, installation and support for the US Navy in N. Dakota, central California, and Okinawa
- 1995-1996 Search for chaotic escape rates in microwave-assisted tunneling of electrons electrostatically trapped on the surface of liquid helium at ~ 0.1 Kelvin (John M. Goodkind, UC San Diego).
- 1994-1995 Computational validation of a quaternionic spinor formulation of general relativity with specific focus on postdiction of the anomalous magnetic moment of the electron (Mendel Sachs, SUNY Buffalo).
- 1990-1995 PhD Thesis (advisor: Charles D. Buchanan, UC Los Angeles): measured the production rates of K^0 , Λ^0 , Ξ^- , $\Sigma^{*\pm}$, and Ω^- from the last TPC/two-gamma dataset, compiled world averages for all hadron production rates, energies, and experiments, and evaluated the best widely-used models.
- 1992-1993 Medical imaging independent study and observation with PET at UC Los Angeles (Ed Hoffman), MRI at UC Los Angeles (Roger Woods), and MRI at University of Southern California (Manbir Singh)
- 1989 E771 fixed target B-physics experiment: scintillation array and pad chamber construction at Fermi National Accelerator Laboratory (David B. Cline, UC Los Angeles).
- 1988-1990 Φ -factory experiment simulations: CP and CPT violation analysis methods and detector design for a proposal at UC Los Angeles (Charles D. Buchanan, UC Los Angeles)
- 1987-1988 B-factory simulations: CP violation detectability dependence on beam asymmetry (Charles D. Buchanan, UC Los Angeles)
- 1987 Stationary state calculation of the quartic potential (O.J. Lumpkin, UC San Diego)
- 1986 FFT and display programming for non-linear oscillations of Pt or Pd catalysis (M. Brian Maple, UC San Diego)

PUBLICATIONS

- 1) "A LINEAR COLLIDER PHI FACTORY AND BEAM DYNAMICS TEST MACHINE." By W.A. Barletta, R.C. Berg, A. Boden, C. Buchanan, D.B. Cline, A. Fridman, C.H. Ho, C. Pellegrini. PRINT-89-0416, May 1989. 17pp. Published in: "International Conference on CP Violation, 25th Anniversary of CP Violation Discovery, Blois, France, May 22-26, 1989: proceedings." Edited by J. Tran Thanh Van. Editions Frontiers, 1990. pp.421-442 (Presented by D.Cline in proceedings).
- 2) "METHODS TO MEASURE (EPSILON-PRIME / EPSILON) TO THE LEVEL OF APPROXIMATELY 10^{-4} AT A PHI FACTORY." By R.C. Berg, A.F. Boden, C.D. Buchanan, D.B. Cline, T. Foshe (UCLA). UCLA-HEP-90-001, Apr 1990. 15pp. Published in Mod.Phys.Lett.A6:1163-1172, 1991.

- 3) "STUDY OF $\text{CHI}(C2)$ PRODUCTION IN PHOTON-PHOTON COLLISIONS." By TPC/Two-Gamma Collaboration (D. Bauer *et al.*). SLAC-PUB-5949, Oct 1992. 19pp. Published in *Phys.Lett.B302:345-350*, 1993 .
- 4) "EVIDENCE FOR SPIN ONE RESONANCE PRODUCTION IN THE REACTION $\text{GAMMA GAMMA}^* \rightarrow \text{PI}^+ \text{PI}^- \text{PI}^0 \text{PI}^0$." By TPC/Two Gamma Collaboration (D.A. Bauer *et al.*). SLAC-PUB-6094, UCSB-HEP-93-02, Mar 1993. 34pp. Published in *Phys.Rev.D48:3976-3987*, 1993.
- 5) "MEASUREMENT OF ALPHA-S IN $\text{E}^+ \text{E}^-$ ANNIHILATION AT $\text{E}(\text{CM}) = 29\text{-GEV}$." By TPC/Two Gamma Collaboration (D.A. Bauer *et al.*). SLAC-PUB-6518, LBL-35812, Jul 1994. 15pp. Contributed to the "International Conference on High Energy Physics, Glasgow, Scotland, Jul 20-27, 1994."
- 6) "MEASUREMENT OF THE KAON CONTENT OF THREE PRONG TAU DECAYS." By TPC/Two Gamma Collaboration (D.A. Bauer *et al.*). LBL-33037, SLAC-PUB-6250, Aug 1993. 10pp. Published in *Phys.Rev.D50:13-17*, 1994.
- 7) "DEVELOPING A BROADBAND CIRCUIT MODEL FOR THE CUTLER VLF ANTENNA." By T.Simpson (University of South Carolina), M. Roberts and E. Berg (Veridian Systems). Presented at the "2001 IEEE AP-S International Symposium and USNC/URSI National Radio Science Meeting." July 2001.
- 8) "DUAL-FREQUENCY DISTORTION PREDICTIONS FOR THE CUTLER VLF ARRAY." By E.C. Berg, M.A. Roberts (Veridian) and T.L. Simpson (University of South Carolina, Electrical and Computer Engineering Department). *IEEE Transactions on Aerospace and Electronic Systems*, July 2003. pp1016-1034.
- 9) "A MEASUREMENT OF THE GRAVITATIONAL CONSTANT USING A CRYOGENIC TORSION PENDULUM." By M.K. Bantel, E.C. Berg, R.D. Newman. 2pp. Contributed to the "Conference on Precision Electromagnetic Measurements, Ottawa, Canada, June 16-21, 2002."
- 10) "LABORATORY TESTS OF GRAVITATIONAL PHYSICS USING A CRYOGENIC TORSION PENDULUM." By E.C. Berg, M.K. Bantel, W.D. Cross, T. Inoue, R.D. Newman, J.H. Steffen, M.W. Moore, P.E. Boynton. in *The Tenth Marcel Grossmann Meeting on General Relativity, Rio de Janeiro, Brazil, July 20-26, 2003*, eds. M.N. Novello and S.P. Bergliaffa, World Scientific, pp. 994-1010, 2006 (ISBN 981-256-667-8). Eric C. Berg was the invited speaker.
- 11) "PROGRESS IN THE MEASUREMENT OF THE GRAVITATIONAL CONSTANT USING A CROGENIC TORSION PENDULUM." By E. C. Berg, M. K. Bantel, and R. D. Newman. 2pp. Contributed to the "2004 Conference on Precision Electromagnetic Measurements, London, England, June 27 – July 2, 2004." Contributing speaker, Eric C. Berg.
- 12) "PLANNED TESTS OF THE EQUIVALENCE PRINCIPLE WITH A CRYOGENIC TORSION PENDULUM." By E. C. Berg, W. D. Cross, and R. D. Newman (UC Irvine); P. E. Boynton, M. W. Moore, and J. H. Steffen (U Washington). 14pp. Contributed to the textbook, "Testing the Equivalence Principle on Ground and in Space" in the *Lecture Notes of Physics Series*. Pub. by Springer, Ed. by C. Lämmerzahl, C.W.F. Everitt and R. Ruffini. (accepted for publication, 2008).
- 13) "GRAVITATION PHYSICS AT BGPL," by P.E.Boynton, R.M.Bonicalzi, A.M.Kalet, A.M.Kleczewski, J.K.Lingwood, K.J.McKenney, M.W.Moore, J.H.Steffen, E.C.Berg, W.D.Cross, R.D.Newman, and R.E.Gephart. 7pp. Published in *New Astron. Rev.* 51: 334-340, 2007.
- 14) "MEASURING THE GRAVITATIONAL CONSTANT WITH A CROGENIC TORSION PENDULUM," by M.K.Bantel, E.C. Berg, W.D. Cross, and R. D. Newman, (submitted for publication in the proceedings of:) *2008 Conference on Precision Electromagnetic Measurements*, Broomfield, Colorado, June 8-13, 2008, 2pp.
- 15) "TESTS OF THE GRAVITATIONAL INVERSE SQUARE LAW AT SHORT RANGES," by R.D. Newman, E.C. Berg, P.E. Boynton, 16pp. Published in *Space Sci. Rev.* 148: 175-190, 2009.