

CURRICULUM VITAE

Bradley Lee Roberts

roberts@bu.edu

July 2009

Department of Physics Work Phone: 617-353-2187
Boston University
Boston, MA 02215

Academic Training

University of Virginia B.S. in Physics, 1968
College of William and Mary M.S. 1970
College of William and Mary Ph.D. 1974

Thesis: *Measurements of the Magnetic Dipole Moments of the Antiproton and Σ^- Hyperon*

Professional Employment

May 1974 - April 1976 Rutherford High Energy Laboratory (UK) - Research Associate
April 1976 - Sept. 1977 MIT Laboratory for Nuclear Science - Research Associate
Sept. 1977 - Aug. 1983 Boston University - Assistant Professor of Physics
Sept. 1983 - Aug. 1989 Boston University - Associate Professor of Physics
June 1989 - Aug. 1992 Boston University - Associate Chairman, Department of Physics
Sept. 1989 - present Boston University - Professor of Physics

Membership in Professional Societies

Fellow, American Physical Society - Division of Particles and Fields, Division of Nuclear Physics, Division of Physics of Beams.

Chairman - Users' Executive Committee, Brookhaven National Laboratory AGS Users Group, July 1989 - June 1991.

$\Sigma \Xi$

American Association for the Advancement of Science

Membership on Advisory Committees

Brookhaven National Laboratory High Energy Equipment Pool (HEEP) (advisory) Committee, 1987 - 1990.

Brookhaven National Laboratory AGS Program Committee, September 1988 - 1991.

Organizing committee *Future Directions in Particle and Nuclear Physics at Multi-GeV Facilities*. Fermilab, December 1994

International Advisory Committee for SIGHAD03, Workshop on Hadronic Cross Section at Low Energy, Pisa, October 2003.

College of William and Mary, Advisory Board on Graduate Studies, 2004 -

Muon Physics Working Group co-coordinator, NuFact 2005 and 2006.

International advisory committee for the International Workshop: e^-e^+ Collisions from phi to psi, Novosibirsk, March 2006.

Member of the Physics Council of the International Scoping Study for a Neutrino Factory, and I served as the Muon Physics Coordinator, 2005-2006.

Conference Chairman, Lepton Moments 2003, and Lepton Moments 2006, see <http://g2pc1.bu.edu/lept06/> and <http://g2pc1.bu.edu/leptonmom/>

International Advisory Committee for the International Workshop: e^-e^+ Collisions from phi to psi, Frascati, April 2008.

Scientific Program Committee for NuFact2008, Valencia, July 2008.

International Advisory Committee, International Workshop on Tau Lepton Physics, Novosibirsk, September 2008.

Scientific Program Committee, NuFact 2009, Chicago, July 2009

Research Experience

Oak Ridge National Laboratory, Spallation Neutron Source

I am involved in the search for a neutron electric dipole moment at the SNS, and am work-package leader for the light collection system from the central cell. We are developing the light guides which provide the signal for the experiment. Since an EDM is forbidden by both P and T symmetries, and thus CP violation if CPT is a good symmetry, the observation of an EDM would represent the discovery of a new source of CP violation. Since the dominance of matter over anti-matter in the universe requires new sources of CP violation, this addresses one of the fundamental questions of modern physics.

Brookhaven National Laboratory AGS:

Muon ($g-2$) AGS E821 and beyond: E821 - V.W. Hughes, B.L. Roberts Co-Spokepersons, W. Morse Resident Spokesperson. This experiment improved on the CERN measurement by a factor of 14. This level of sensitivity is adequate to measure the contribution to $g-2$ from virtual W^\pm, Z^0 . Since it is potentially sensitive to a range of physics beyond the standard model such as supersymmetry it has been highly cited: paper 72 (93 citations), paper 82 (87 citations), paper 84 (576 citations), paper 89 (368 citations), paper 98 (316 citations), and paper 101 (180 citations), where the citation numbers are taken from the

Spires database. The precision obtained for negative and positive muons is the same, ± 0.7 ppm, and assuming CPT the combined precision is ± 0.5 ppm. E821 was statistics limited, and we have proposed to improve on our measurement by a factor of 4 at Fermilab.

μ Lan A precision measurement of the positive muon lifetime to 1 ppm, Paul Scherrer Institute experiment R99.07.01. This experiment will provide a factor of 20 improvement in the precision of the muon lifetime, and thus the weak coupling constant G_F . Robert Carey and David Hertzog spokespersons. This experiment now in the data collection phase.

PAST RESEARCH: CERN Low Energy Antiproton Ring (LEAR): PS195 *Tests of CP Violation with K^0 and \bar{K}^0 at LEAR*. Paper 68 on the first direct observation of T violation in the neutral kaon system now has 121 citations. Brookhaven AGS - Spokesman for E811, *Radiative Kaon Capture and Hyperon Weak Radiative Decay*. Brookhaven Experiment, E857, $\pi^- p \rightarrow \pi^0 \pi^0 n$ and *chiral symmetry breaking*, J. Lowe and B.L. Roberts Spokesmen. Co-spokesman (with R.E. Welsh) for E723, *A Precision Measurement of the Σ^- Magnetic Moment*. MIT-Bates Linac - Coherent π^0 photoproduction in the $\Delta(1232)$ region off ^4He and ^{12}C , nuclear Compton scattering off ^4He in the Δ region, π^+ and π^0 photoproduction off nuclei in the threshold region. POSTGRADUATE: At the Rutherford Laboratory I participated in K^- and Σ^- atom experiments. At MIT-Bates I worked on photo-proton experiments (both exclusive and inclusive) and the three-body photo-disintegration of ^3He . GRADUATE: I participated in π^- and μ^- experiments at the SREL synchrocyclotron, and in \bar{p} , K^- and Σ^- atom experiments at the Brookhaven AGS and the Argonne ZGS.

Publications in Refereed Journals

1. J.D. Fox, P.D. Barnes, R.A. Eisenstein, W.C. Lam, J. Miller, R.B. Sutton, D.A. Jenkins, R.J. Powers, M. Eckhause, J.R. Kane, B.L. Roberts, M.E. Vislay, R.E. Welsh, A.R. Kunselman, *Measurement of the Magnetic Moment of the Antiproton*, Phys. Rev. Lett. **29**, 193 (1972).
2. P.D. Barnes, S. Dytman, R.A. Eisenstein, W.C. Lam, M. Miller, R.B. Sutton, D.A. Jenkins, R.J. Powers, M. Eckhause, J.R. Kane, B.L. Roberts, R.E. Welsh, A.R. Kunselman, R.P. Redwine, R.E. Segel, *Strong-Interaction Effects in Antiprotonic Atoms*, Phys. Rev. Lett. **29**, 1132 (1972).
3. F.R. Kane, M. Eckhause, G.H. Miller, B.L. Roberts, M.E. Vislay, R.E. Welsh, *Muon Capture Rates on ^{16}O Leading to Bound States of $^{16}\text{N}^*$* , Phys. Lett. **45B**, 292 (1973).
4. J.D. Fox, W.C. Lam, P.D. Barnes, R.A. Eisenstein, J. Miller, R.B. Sutton, D.A. Jenkins, M. Eckhause, J.R. Kane, B.L. Roberts, R.E. Welsh, A.R. Kunselman, *Measurement of the Σ^- Magnetic Moment*, Phys. Rev. Lett. **31**, 1084 (1973).
5. B.L. Roberts, C.R. Cox, M. Eckhause, J.R. Kane, R.E. Welsh, D.A. Jenkins, W.C. Lam, P.D. Barnes, R.A. Eisenstein, J. Miller, R.B. Sutton, A.R. Kunselman, R.J. Powers, *New Measurement of the Σ^- Magnetic Moment*, Phys. Rev. Lett. **32**, 1265 (1974).
6. B.L. Roberts, C.R. Cox, M. Eckhause, J.R. Kane, R.E. Welsh, D.A. Jenkins, W.C. Lam, P.D. Barnes, R.A. Eisenstein, J. Miller, R.B. Sutton, A.R. Kunselman, R.J. Powers, J.D. Fox, *New Value for the Magnetic Moment of the Antiproton*, Phys. Rev. Lett. **33**,

1181 (1974).

7. M. Eckhause, J.R. Kane, B.L. Roberts, R.E. Welsh, R.P. Redwine, R.E. Segel, P.D. Barnes, R.A. Eisenstein, W.C. Lam, J. Miller, R.B. Sutton, D.A. Jenkins, R.J. Powers, A.R. Kunselman, *Observation of Antiprotonic X-rays in ${}^6\text{Li}$ and ${}^4\text{He}$* , Phys. Rev. **C11**, 1056 (1975).

8. B.L. Roberts, C.R. Cox, M. Eckhause, J.R. Kane, R.E. Welsh, D.A. Jenkins, W.C. Lam, P.D. Barnes, R.A. Eisenstein, J. Miller, R.B. Sutton, A.R. Kunselman, R.J. Powers, J.D. Fox, *Measurements of the Magnetic Dipole Moments of the Antiproton and the Σ^- Hyperon*, Phys. Rev. **D12**, 1232 (1975).

9. B.L. Roberts, R.A.J. Riddle, G.T.A. Squier, *Measurement of Lorentzian Linewidths*, Nucl. Inst. and Meth. **130**, 559 (1975).

10. C.J. Batty, S.F. Biagi, R.A.J. Riddle, B.L. Roberts, G.J. Pyle, G.T.A. Squier, R.E. Hawkins, *Strong Interaction Effects in Kaonic Atoms*, Phys. Lett. **60B**, 355 (1976).

11. B.L. Roberts, *Some Comments on the Physics of the Horn and Right-Hand Technique*, The Horn Call, J. Int. Horn Soc., **6** No. 2, 41 (1976).

12. C.J. Batty, S.D. Hoath, B.L. Roberts, *Measurement of Lorentzian Linewidths: Numerical Evaluation of the Voigt Integral*, Nucl. Inst. and Meth. **137**, 179 (1976).

13. J.L. Matthews, W. Bertozzi, M.J. Leitch, C.A. Peridier, B.L. Roberts, C.P. Sargent, W. Turchinets, D.J.S. Findlay, R.O. Owens, *Short-Range, High-Momentum Effects in the Reaction, ${}^{16}\text{O}(\gamma, p_0)$ for $E_\gamma = 100\text{-}300\text{ MeV}$* , Phys. Rev. Lett. **38**, 8 (1977).

14. C.J. Batty, S.F. Biagi, M. Blecher, R.A.J. Riddle, B.L. Roberts, J.D. Davies, G.J. Pyle, G.T.A. Squier, D.M. Asbury, *Measurement of Kaonic X-Rays from Li , LiH and Be* , Nucl. Phys. **A282**, 487 (1977).

15. B.L. Roberts, *Measurement of the Antiproton Magnetic Moment and Mass*, Phys. Rev. **D17**, 358 (1978).

16. C.J. Batty, S.F. Biagi, M. Blecher, S.D. Hoath, R.A.J. Riddle, B.L. Roberts, J.D. Davies, G.J. Pyle, G.T.A. Squier, D.M. Asbury, *Measurement of Strong Interaction Effects in Σ Atoms*, Phys. Lett. **74B**, 27 (1978).

17. C.J. Batty, S.F. Biagi, M. Blecher, R. Kunselman, R.A.J. Riddle, B.L. Roberts, J.D. Davies, G.J. Pyle, G.T.A. Squier, D.M. Asbury, M. Leon, *$E2$ Nuclear Resonance Effects in Pionic and Kaonic Atoms*, Nucl. Phys. **A296**, 361 (1978).

18. C.J. Batty, S.F. Biagi, M. Blecher, S.D. Hoath, R.A.J. Riddle, B.L. Roberts, J.D. Davies, G.J. Pyle, G.T.A. Squier, D.M. Asbury, A.S. Clough, *Doppler-Shifted Nuclear Gamma Rays Following Stopped K^- Capture in Aluminium*, Phys. Lett. **76B**, 44 (1978).

19. D.J.S. Findlay, R.O. Owens, M.J. Leitch, J.L. Matthews, C.A. Peridier, B.L. Roberts, C.P. Sargent, *The P-Shell Proton Momentum Distribution in ${}^{16}\text{O}$ above the Fermi Momentum*, Phys. Lett. **74B**, 305 (1978).

20. E.C. Booth, B. Chasan, F.L. Milder, B.L. Roberts and J. Commuzzi, *π^+ Photo-production off ${}^{16}\text{O}$ and ${}^9\text{Be}$ Near Threshold*, Phys. Rev. C **20**, 1603 (1979).

21. C.J. Batty, S.F. Biagi, M. Blecher, S.D. Hoath, R.A.J. Riddle, B.L. Roberts, J.D. Davies, G.J. Pyle, G.T.A. Squier, D.M. Asbury and A.S. Clough, *Measurement of Strong Interaction Effects in Kaonic Atoms*, Nucl. Phys. **A329**, 407 (1979).
22. C.J. Batty, S.F. Biagi, R.A.J. Riddle, B.L. Roberts, G.J. Pyle, G.T.A. Squier, D.M. Asbury, A.S. Clough, *Nuclear Quadrupole Deformation Effects on Pionic and Kaonic X-Rays*, Nucl. Phys. **A355**, 383 (1981).
23. R.A. Schumacher, G.X. Adams, D.R. Ingham, J.L. Matthews, W.W. Sapp, R.S. Turlay, R.O. Owens and B.L. Roberts, *Cu(γ, p)X Reaction at $E_\gamma = 150$ and 300 MeV*, Phys. Rev. **C25**, 2269 (1982).
24. G.W. Dodson, E.C. Booth, F.L. Milder, B.E. Parad, B.L. Roberts, D.R. Tieger, and J. Commuzzi, *Threshold Region Photoproduction of Neutral Mesons off Complex Nuclei*, Phys. Rev. **C26**, 2548 (1982).
25. C.A. Peridier, M.J. Leitch, J.L. Matthews, H. Jeremie, M. Irshad, and B.L. Roberts, *The $^3\text{He}(\gamma, 2p)n$ Reaction in the Energy Range $E_\gamma = 60$ -180 Mev*, Z. Physik **A310**, 317 (1983).
26. D.W. Hertzog, M. Eckhause, K.L. Giovanetti, J.R. Kane, W.C. Phillips, W.F. Vulcan, R.E. Welsh, R.J. Whyley, R.G. Winter, G.W. Dodson, J.P. Miller, F. O'Brien, B.L. Roberts, D.R. Tieger, R.J. Powers, N.J. Colella, R.B. Sutton, and A.R. Kunselman, *Precision Measurement of the Magnetic Moment of the Σ^- Hyperon*, Phys. Rev. Lett. **51**, 1131 (1983).
27. D.R. Tieger, E.C. Booth, J.P. Miller, B.L. Roberts, J. Commuzzi, G.W. Dodson, S. Gilad, and R.P. Redwine, *Measurement of the Reaction $^4\text{He}(\gamma, \pi^0)^4\text{He}$ for $E_\gamma = 290$ MeV*, Phys. Rev. Lett. **53**, 755 (1984).
28. J.R. Lindemuth, M. Eckhause, K.L. Giovanetti, J.R. Kane, M.S. Pandley, A.M. Rushton, P.D. Barnes, J.N. Craig, R.A. Eisenstein, J.D. Sherman, R.B. Sutton, W.R. Wharton, J.P. Miller, B.L. Roberts, A.R. Kunselman, R.J. Powers, *Antiprotonic Atoms in Gaseous H_2 and He and in Liquid H_2* , Phys. Rev. **C30**, 1740 (1984).
29. M.J. Leitch, J.L. Matthews, W.W. Sapp, C.P. Sargent, S.A. Wood, D.J.S. Findlay, R.O. Owens, and B.L. Roberts, *$^{16}\text{O}(\gamma, p)^{15}\text{N}$ Reaction for $E_\gamma = 100$ -400 MeV*, Phys. Rev. **C31**, 1633 (1985).
30. M.J. Leitch, F.C. Lin, J.L. Matthews, W.W. Sapp, C.P. Sargent, D.J.S. Findlay, R.O. Owens and B.L. Roberts, *$^{40}\text{Ca}(\gamma, p_0)^{39}\text{K}$ reaction for $E_\gamma = 100 - 300$ MeV*, Phys. Rev. **C33**, 1511 (1986).
31. E. Austin, E.C. Booth, E.K. McIntyre, J.P. Miller, B.L. Roberts, D. Whitehouse and G.W. Dodson, *The Differential Cross Section for Coherent Photon Scattering from ^4He at 180 MeV*, Rev. Lett. **57**, 972 (1986).
32. K.P. Gall, E. Austin, J.P. Miller, F. O'Brien, B.L. Roberts, D.R. Tieger, G.W. Dodson, M. Eckhause, J. Ginkel, P.P. Guss, D.W. Hertzog, D. Joyce, J.R. Kane, C. Kenney, J. Kraiman, W.C. Phillips, W.F. Vulcan, R.E. Welsh, R.J. Whyley, R.G. Winter, R.J. Powers, R.B. Sutton and A.R. Kunselman, *Precision Measurements of the K^- and Σ^- Masses*, Phys. Rev. Lett. **60**, 186 (1988).

33. D.W. Hertzog, M. Eckhause, P.P. Guss, D. Joyce, J.R. Kane, W.C. Phillips, W.F. Vulcan, R.E. Welsh, R.J. Whyley, R.G. Winter, E. Austin, J.P. Miller, F. O'Brien, B.L. Roberts, G.W. Dodson, R.J. Powers, R.B. Sutton and A.R. Kunselman *Exotic Atom Measurement of the Magnetic Dipole Moment of the Σ^- Hyperon*, Phys. Rev. **D37**, 1142 (1988).
34. N.P. Hessey, E.C. Booth, W.J. Fickinger, K.P. Gall, M.D. Hasinoff, D. Horváth, J. Lowe, E.K. McIntyre, D.F. Measday, J.P. Miller, A.J. Noble, B.L. Roberts, D.K. Robinson, M. Sakitt, M. Salomon, J.F. Skelly, D.A. Whitehouse, *A Measurement of the Branching Ratio for the $\Sigma^+ \rightarrow p\gamma$ Decay*, Z. Physik, **C42**, 175 (1989).
35. D.A. Whitehouse, E.C. Booth, K.P. Gall, E.K. McIntyre, J.P. Miller, B.L. Roberts, J. Lowe, N.P. Hessey, M.D. Hasinoff, D.F. Measday, A.J. Noble, J. Skelly, W.J. Fickinger, D.K. Robinson, D. Horváth, and M. Salomon, *Radiative Kaon Capture at Rest on the Proton*, Phys. Rev. Lett. **63**, 1352 (1989).
36. C.J. Batty, M. Eckhause, K.P. Gall, P.P. Guss, D.W. Hertzog, J.R. Kane, A.R. Kunselman, J.P. Miller, F. O'Brien, W.C. Phillips, R.J. Powers, B.L. Roberts, R.B. Sutton, W.F. Vulcan, R.E. Welsh, R.J. Whyley and R.G. Winter, *Strong Interaction Effects in High-Z K^- Atoms*, Phys. Rev. **C40** 2154 (1989).
37. K.P. Gall, E.C. Booth, E.K. McIntyre, J.P. Miller, B.L. Roberts, D.A. Whitehouse, J. Lowe, N.P. Hessey, M.D. Hasinoff, D.F. Measday, A.J. Noble, M. Sakitt, W.J. Fickinger, D.K. Robinson, D. Horváth, and M. Salomon, *Radiative Kaon Capture on Deuterium and the Λ - n Scattering Lengths*, Phys. Rev. **C42**, R475 (1990).
38. J. Lowe, B. Bassalleck, H. Burkhardt, W.J. Fickinger, J.R. Hall, M.D. Hasinoff, D. Horváth, G. Koch, K.D. Larson, J.P. Miller, A.J. Noble, B.L. Roberts, D.K. Robinson, M. Sakitt, M.E. Sevier, N.W. Tanner, C.E. Waltham, T.M. Warner, D.M. Wolf, *The reaction $\pi^- p \rightarrow \pi^0 \pi^0 n$ near threshold and chiral symmetry breaking*, Phys. Rev. **C44**, 956 (1991). (38 citations)
39. R. Adler et al., (CPLEAR Collaboration), *Determination of the Relative Branching Ratios for $p\bar{p} \rightarrow \pi^+ \pi^-$ and $p\bar{p} \rightarrow K^+ K^-$* , Phys. Lett. **B 267**, 154 (1991).
40. A. Angelopoulos et al., (CPLEAR PID Group), *The CPLEAR Particle Identification Detector*, Nucl. Inst. and Meth. **A311**, 78 (1992).
41. A.J. Noble, K.D. Larson, B. Bassalleck, W.J. Fickinger, J.R. Hall, A.L. Hallin, M.D. Hasinoff, D. Horváth, J. Lowe, E.K. McIntyre, D.F. Measday, J.P. Miller, B.L. Roberts, D.K. Robinson, M. Sakitt, M. Salomon, C.E. Waltham, T.M. Warner, D.A. Whitehouse and D.M. Wolfe, *Measurement of the $\Lambda \rightarrow n\gamma$ branching ratio*, Phys. Rev. Lett. **69**, 410 (1992).
42. R. Adler et al., (CPLEAR Collaboration), *First Determination of CP Violation Parameters from $K^0 - \bar{K}^0$ Decay Asymmetry*, Phys. Lett. **B 286**, 180 (1992).
43. K.D. Larson, A.J. Noble, B. Bassalleck, H. Burkhardt, W.J. Fickinger, J.R. Hall, A.L. Hallin, M.D. Hasinoff, D. Horváth, P.G. Jones, J. Lowe, E.K. McIntyre, D.F. Measday, J.P. Miller, B.L. Roberts, D.K. Robinson, M. Sakitt, M. Salomon, S. Stanislaus, C.E. Waltham, T.M. Warner, D.A. Whitehouse and D.M. Wolfe, *Weak radiative decay $\Lambda \rightarrow n\gamma$ and the radiative capture reaction $K^- p \rightarrow \Sigma(1385)\gamma$* , Phys. Rev. **D47**, 799 (1993).

44. R.J. Powers, M. Eckhause, P.P. Guss, A.D. Hancock, D.W. Hertzog, D. Joyce, J.R. Kane, W.C. Phillips, W.F. Vulcan, R.E. Welsh, R.J. Whyley, R.G. Winter, E.J. Austin, G.W. Dodson, J.P. Miller, F. O'Brien, D.R. Tieger, B.L. Roberts, R.B. Sutton and A.R. Kunselman, *Strong-interaction effects in Sigma Hyperonic Atoms of W and Pb*, Phys. Rev. **C47**, 1263 (1993).
45. R. Adler et al., (CPLEAR Collaboration), *Bose-Einstein Correlations in $\bar{p}p$ Annihilations at Rest*, Z.Phys., **C63**, 541(1994).
46. R. Adler et al., (CPLEAR Collaboration), *Inclusive Measurement of \bar{p} Annihilation at Rest in Gaseous Hydrogen to Final States Containing ρ and f_2* , Z.Phys., **C65**, 199 (1995).
47. R. Adler et al., (CPLEAR Collaboration), *Measurement of the CP violation parameter η_{+-} using tagged K^0 and \bar{K}^0* , Phys. Lett. **B 363**, 243 (1995).
48. R. Adler et al., (CPLEAR Collaboration), *Measurement of $K_L - K_S$ mass difference using semileptonic decays of tagged neutral kaons.*, Phys. Lett. **B 363**, 237 (1995).
49. R. Adler et al., (CPLEAR Collaboration plus J. Ellis, J.L. Lopez, N.E. Mavromatos, and D.V. Nanopoulos), *Tests of CPT symmetry and quantum mechanics with experimental data from CPLEAR.*, Phys. Lett. **B 364**, 239 (1995), (103 citations).
50. R.R. Akhmetshin et al., (CMD2 Collaboration), *Measurement of Phi Meson Parameters with CMD-2 Detector at VEPP-2M Collider*, Phys. Lett. **B364**, 199 (1995).
51. R. Adler et al., (CPLEAR Collaboration), *A new determination of the $K_L - K_S$ mass difference and the phase of the CP violation parameter η_{+-} from an evaluation of experimental data*, Phys. Lett. **B 369**, 367 (1996).
52. R. Adler et al., (CPLEAR Collaboration), *Search for CP violation in the decay of neutral kaons to $\pi^+\pi^-\pi^0$* , Phys. Lett. **B 370**, 167 (1996)
53. R. Adler et al., (CPLEAR Collaboration), *Observation of the CP Conserving $K_S \rightarrow \pi^+\pi^-\pi^0$ decay amplitude*, Phys. Lett. **B 374**, 313 (1996).
54. R. Adler et al., (CPLEAR collaboration), *First observation of a particle-antiparticle asymmetry in the decay of neutral kaons into $\pi^0\pi^0$* , Zeit. Phys. **C70**, 211 (1996).
55. R. Adler et al., (CPLEAR Collaboration), *The CPLEAR detector at CERN.*, Nucl. Instr. and Meth. **A 379**, 76-100 (1996).
56. R.R. Akhmetshin et al., (CMD-2 Collaboration) *Study of $K_S K_L$ Coupled Decays and $K_L Be$ Interactions with the CMD-2 Detector at VEPP-2M Collider*, Phys.Lett. **B398**, 423 (1997).
57. R. Adler et al., (CPLEAR Collaboration), *CPLEAR Results on the CP Parameters of Neutral Kaons Decaying to $\pi^+\pi^-\pi^0$* Phys. Lett. **B407**, 193 (1997).
58. A. Angelopoulos et al., (CPLEAR Collaboration), *Measurement of the neutral kaon regeneration amplitude in carbon at momenta below 1 GeV/c*, Phys. Lett. **B 413**, 422 (1997).
59. A. Angelopoulos et al., (CPLEAR Collaboration), *An upper limit for the branching*

- ratio of the decay $K_s \rightarrow e^+e^-$, Phys. Lett. **B413**, 232 (1997).
60. A. Angelopoulos et al., (CPLEAR Collaboration), *Direct Determination of Two Pion Correlations for $\bar{p}p \rightarrow 2\pi^+2\pi^-$ Annihilation at Rest*, Eur.Phys.J. **C1**, 139 (1998)
61. R.R. Akhmetshin et al. (CMD-2 Collaboration), *Search for Rare Phi Decays in $\pi^+\pi^-\gamma$ Final State*, Phys.Lett. **B415**, 452 (1997).
62. A. Apostolakis et al., (CPLEAR Collaboration), *An EPR Experiment Testing the Nonseparability of the $K^0\bar{K}^0$ Wave Function*, Phys.Lett. **B422**, 339 (1998).
63. R.R. Akhmetshin, et al., (CMD-2 Collaboration), *Study of Dynamics of $\phi \rightarrow \pi^+\pi^-\pi^0$ Decay with CMD-2 Detector*, Phys. Lett. **B434**, 426-436 (1998).
64. A. Angelopoulos et al., (CPLEAR Collaboration), *Search for CP Violation in the Decay of Tagged \bar{K}^0 and K^0 to $\pi^0\pi^0\pi^0$* , Phys.Lett. **B425**, 391 (1998).
65. A. Angelopoulos et al., (CPLEAR Collaboration), *Measurement of the $K_L - K_S$ Mass Difference using Semileptonic Decays of Tagged Neutral Kaons*, Phys. Lett. **B444**, 38 (1998)
66. A. Angelopoulos et al., (CPLEAR Collaboration), *Measurement of the CP Violation Parameter η_{00} using Tagged \bar{K}^0 and K^0* , Phys.Lett. **B420**, 191 (1998).
67. A. Angelopoulos, et al., (CPLEAR collaboration), *Measurement of the $K_L - K_S$ mass difference using semi-leptonic decays of tagged neutral kaons*, Phys. Lett. **B444**, 38-42(1998).
68. A. Angelopoulos et al., (CPLEAR Collaboration), *First Direct Observation of Time Reversal Noninvariance in the Neutral Kaon System*, Phys. Lett. **B444** 43 (1998). (139 citations¹)
69. A. Angelopoulos et al., (CPLEAR Collaboration), *A Determination of the CPT Violation Parameter $Re(\delta)$ from the Semileptonic Decay of Strangeness Tagged Neutral Kaons*, Phys. Lett. **B444**, 52 (1998).
70. A. Angelopoulos et al., (CPLEAR Collaboration), *Pion Correlations and Resonance Effects in $\bar{p}p$ Annihilation at Rest to $2\pi^+ + 2\pi^-\pi^0$* , Eur. Phys. J. **C6**, 437 (1999).
71. A. Angelopoulos et al., (CPLEAR Collaboration), *The Neutral Kaon Decays to $\pi^+\pi^-\pi^0$: A Detailed Analysis of the CPLEAR Data*, Eur. Phys. J. **C5**, 389-409 (1998).
- 72 R.M. Carey et al., (Muon ($g - 2$) Collaboration), *A New Measurement of the Anomalous Magnetic Moment of the Positive Muon*, Phys. Rev. Lett. **82**, 1632 (1999). (100 citations)
73. R.R. Akhmetshin et al., (CMD2 Collaboration) *Study of the Radiative Decay $\phi \rightarrow \eta\gamma$ with CMD-2 Detector*, Phys. Lett. **B460** 242-247 (1999).

¹Citation numbers are taken from the SPIRES database, (<http://www.slac.stanford.edu/spires/hep/>). This database reports that “The HEP preprint database has over 450,000 records and just under 12,000 of these have more than 50 citations (2.5%).” Spire indicates that paper # 84 was the 8th most cited paper in 2001, and aside from the tabulation of subatomic particle properties (which is always the most cited reference) was the most cited experimental paper of that year.

74. A. Apostolakis et al., (CPLEAR Collaboration) *Determination of the T and CPT Violation Parameters in the Neutral Kaon System Using the Bell-Steinberger Relation and Data From CPLEAR*, Phys. Lett. **B456**, 297-303 (1999) (61 citations).
75. A. Angelopoulos et al., (CPLEAR Collaboration) *Dispersion Relation Analysis of the Neutral Kaon Regeneration Amplitude in Carbon*, Eur. Phys. J. **C10**, 19-25 (1999).
76. A. Apostolakis et al., (CPLEAR Collaboration) *Tests of the Equivalence Principle with Neutral Kaons*, Phys. Lett. **B452**, 425-433 (1999).
77. A. Angelopoulos et al., (CPLEAR Collaboration) *A determination of the CP violation parameter η_{+-} from the decay of strangeness-tagged neutral kaons*, Phys. Lett. **B458**, 545 (1999).
78. A. Angelopoulos et al., (CPLEAR Collaboration) *$K^0 - \bar{K}^0$ Mass and Decay Width Differences: CPLEAR Evaluation*, Phys. Lett. **B471**, 332-338 (1999).
79. A. Angelopoulos et al., (CPLEAR Collaboration) *Pion Correlations and Resonance Effects in $\bar{p}p$ Annihilation at Rest*, Nucl. Phys. **A655**, 218-223 (1999).
80. A. Apostolakis et al., (CPLEAR Collaboration) *Measurement of the Energy Dependence of the Form-factor $F(+)$ in K_{e3}^0 Decay*, Phys. Lett. **B473**, 186-192 (2000).
81. A. Apostolakis et al., (CPLEAR Collaboration) *A Detailed description of the analysis of the decay of neutral kaons to $\pi^+\pi^-$ in the CPLEAR experiment*, Eur. Phys. J. **C18**, 41-55 (2000).
82. H.N. Brown et al., (Muon ($g - 2$) Collaboration), *Improved Measurement of the Positive Muon Anomalous Magnetic Moment*, Phys. Rev. **D62**, 091101 (2000). (98 citations)
83. A. Angelopoulos et al., (CPLEAR Collaboration) *$K^0 < -- > \bar{K}^0$ Transitions Monitored by Strong Interactions: a New Determination of the $K_L - K_S$ Mass Difference*, Phys. Lett. **B503**, 49-57 (2001).
84. H.N. Brown, et al., (Muon ($g - 2$) Collaboration), *Precise Measurement of the Positive Muon Anomalous Magnetic Moment*, Phys. Rev. Lett. **86**, 2227 (2001). (586 citations)
85. G.T. Danby, et al., *The Brookhaven muon storage ring magnet*, Nucl. Inst. and Methods, **A 457**, 151-174 (2001).
86. S.I. Redin, N.M. Ryskulov, G.V. Fedotovich, B.I. Khazin, G.M. Bunce, G.T. Danby, J.W. Jackson, W.M. Morse, R. Prigl, Y.K. Semertzidis, E. Efsthadiadis, B.L. Roberts, A. Grossmann, K. Jungmann, G. zu Putlitz, P. von Walter, S.K. Dhawan, F.J.M. Farley, M. Grosse-Perdekamp, V.W. Hughes, D. Kawall, *Radial magnetic field measurements with a hall probe device in the muon ($g-2$) storage ring magnet at BNL*, Nucl. Inst. and Meth. **A473**, 260-268, (2001).
87. A. Angelopoulos et al., (CPLEAR Collaboration) *T-Violation and CPT-invariance measurements in the CPLEAR experiment: a detailed description of the analysis of neutral-kaon decays to $e\pi\nu$* , Eur. Phys. J. **C22**, 55-79 (2001).
88. R.R.Akhmetshin et al.,(CMD2 Collaboration), *Measurement of $e^+e^- \rightarrow \pi^+\pi^-$ cross-section with CMD-2 around rho-meson*, Phys. Lett. **B527**, 161-172 (2002).

89. G.W. Bennett, et al., (Muon $(g - 2)$ Collaboration), *Measurement of the Positive Muon Anomalous Magnetic Moment to 0.7ppm*, Phys. Rev. Lett. **89**, 101804 (2002). This paper was featured on the cover of Physical Review Letters. (385 citations)
90. A. Yamamoto, Y. Makida, K. Tanaka, F. Krienen, B.L. Roberts, H.N. Brown, G. Bunce, G.T. Danby, M. Grosse Perdekamp, H. Hseuh, L. Jia, Y.Y. Lee, M. Mapes, W. Meng, W. Morse, C. Pai, R. Prigl, W. Sampson, J. Sandberg, M. Suenaga, T. Tallarico, F. Toldo, K. Woodle, M.A. Green, I. Itoh, H. Otsuka, Y. Saito, T. Ozawa, Y. Tachiya, H. Tanaka, A. Grossmann, K. Jungmann, G. zu Putlitz, H. Deng, S. Dhawan, V. Hughes, D. Kawall, J. Pretz, S. Redin, E. Sichtermann, A. Steinmetz, *The Superconducting Inflector for the BNL $g-2$ Experiment*, Nucl. Inst. and Meth. A491:23-40 (2002)
91. Efstratios Efstathiadis, Y.Y. Lee, Jian-lin Mi, Chien Pai, Jonathan M. Paley, B. Lee Roberts, Ralph T. Sanders, Yannis K. Semertzidis, David S. Warburton, *A fast non-ferric kicker for the muon $(g-2)$ experiment*, Nucl. Inst. and Meth. **A496**,8-25 (2002).
92. A. Angelopoulos et al., (CPLEAR Collaboration) *Physics at CPLEAR*, Physics Reports **374**, 165-270 (2003).
93. R.R. Akhmetshin, et al., (CMD2 Collaboration) *Measurement of the cross-section for the process $e + e- \rightarrow K_L^0 K_S^0$ in the energy region $2E = 1.05\text{-GeV}$ to 1.38-GeV with the CMD-2 detector at VEPP-2M*. Physics of Atomic Nuclei **65**, 1222-1227 (2002)
94. R.R. Akhmetshin, et al., (CMD2 Collaboration) *Study of the process $e + e- \rightarrow K_L^0 K_S^0$ in the cm energy range 1.05-GeV to 1.38-GeV with CMD-2.*, Phys. Lett. **B551**, 27-34 (2003)
95. R.R. Akhmetshin et al., (CMD2 Collaboration), *Study of the Process $e^+e^- \rightarrow \omega\pi^0 \rightarrow \pi^0\pi^0\gamma$ in C.M. Energy Range 920-MeV - 1380-MeV at CMD-2* Phys. Lett. **B562**, 173 (2003).
96. R.R. Akhmetshin et al., (CMD2 Collaboration), *Reanalysis of Hadronic Cross-section Measurements at CMD-2*, Phys. Lett. **B578**, 285 (2004).
97. Y.K. Semertzidis, G. Bennett, E. Efstathiadis, F. Krienen, R. Larsen, Y.Y. Lee, W.M. Morse, Y. Orlov, C.S. Ozben, B.L. Roberts, L.P. Snydstrup, D.S. Warburton, *The Brookhaven muon $(G-2)$ storage ring high voltage quadrupoles*, Nucl. Inst. and Meth. **A503**, 458-484 (2003).
98. G. Bennett, et al., (Muon $(g - 2)$ Collaboration), *Measurement of the negative muon anomalous magnetic moment to 0.7 ppm*, Phys. Rev. Lett. **92**, 161802 (2004). (350 citations)
99. F.J.M. Farley, K. Jungmann, J.P. Miller, W.M. Morse, Y.F. Orlov, B.L. Roberts, Y.K. Semertzidis, A. Silenko, E.J. Stephenson, *A new method of measuring electric dipole moments in storage rings*, Phys. Rev. Lett. **93**, 052001 (2004) (46 citations).
100. R.R. Akhmetshin et al. (CMD2 Collaboration), *Study of the processes $e^+e^- \rightarrow \eta\gamma, \pi^0\gamma \rightarrow 3\gamma$ in the c.m. energy range 600-MeV to 1380-MeV at CMD-2*, Phys. Lett. **B605** 26 (2005).
101. G. Bennett, et al., (Muon $(g - 2)$ Collaboration), *Final Report of the Muon E821 Anomalous Magnetic Moment Measurement at BNL* Phys. Rev. **D73**, 072003 (2006)

(247 citations).

102. R.R. Akhmetshin et al., (CMD2 Collaboration) Measurement of the $e^+e^- \rightarrow \pi^+\pi^-$ cross section with the CMD-2 detector in the 370 - 520-MeV c.m. energy range. JETP Lett. **84**, 413-417 (2006), Zh. Eksp. Teor. Fiz. **84**, 491-495 (2006).
103. James P. Miller, Eduardo de Rafael and B. Lee Roberts, *Muon ($g - 2$): experiment and theory*, Rept. Prog. Phys. **70**, 795-881, 2007, (110 citations).
104. D.B. Chitwood, et al., MuLan Collaboration, *Improved Measurement of the Positive-Muon Lifetime and Determination of the Fermi Constant*, Phys. Rev. Lett. **99**, 032001 (2007). One of two papers in this issue of PRL that was selected by the Editors as a paper of special interest. (30 citations)
105. R.R. Akhmetshin et al., (CMD2 Collaboration) *High-statistics measurement of the pion form factor in the rho-meson energy range with the CMD-2 detector*. By CMD-2 Collaboration (R.R. Akhmetshin et al.). Phys. Lett. **B648**, 28-38 (2007).
106. B. Lee Roberts, *Muon Physics: A Pillar of the Standard Model*, an invited, refereed paper published in the Journal of the Physical Society of Japan, **76**, 111009 (2007)
107. G.W. Bennett et al. (Muon G-2 Collaboration), *Statistical equations and methods applied to the precision muon ($g - 2$) experiment at BNL*, Nucl. Inst. and Meth. **A579** 1096-1116 (2007).
108. B.L. Roberts *Muon ($g - 2$): Renormalization at work, all the way down to the weak scale*, Prog. Theor. Phys. Suppl. **170**, 32-55, 2007.
109. G.W. Bennett et al. (Muon G-2 Collaboration), *Search for Lorentz and CPT Violation Effects in Muon Spin Precession*, Phys. Rev. Lett. **100**, 091602 (2008).
110. M. Raidal, et al., *Flavor physics of leptons and dipole moments*, Eur. Phys. J. C **57**, 13-182 2008; on line at: <http://www.springerlink.com/content/784n166817gp2gj8/> (58 citations).
111. A. Bandyopandhyay, et al. (The ISS Physics Working Group) Editors: S.F. King, K. Long, Y. Nagashima, B.L. Roberts and O. Yasuda, *Physics at a future Neutrino Factory and super-beam facility*, Rep. Prog. Phys. **72** (2009) 106201 (185pp), (102 citations).
112. G.W. Bennett, et al. (Muon G-2 Collaboration), *An improved limit on the muon electric dipole moment*, Phys. Rev. **D 80** 052008 (2009).

Books and Book Chapters

g-Factors of Subatomic Particles, in *Atomic Physics Methods in Modern Research*, K. Jungmann, J. Kowalski, I. Reinhard and F. Träger, ed., Springer-Verlag, 1997, pp. 77-94.

Experiment: g-2 Measurement of the Muon, in *Building Blocks of Matter*, edited by John S. Rigden (Macmillan Reference USA, New York, 2003) pp. 233-240.

Advanced Series on Directions in High Energy Physics - Vol. 20 *Lepton Dipole Moments*, ed. B. Lee Roberts and William J. Marciano. World Scientific, Singapore, 2009, which I originated, and recruited Bill Marciano to work with me as co-editor. The book is about 750 pages of text, with 19 chapters written by experts in the field.

B.L. Roberts, *Historical Introduction*, in *Lepton Dipole Moments op cit.*, p15-24.

James P. Miller, B. Lee Roberts and Klaus Jungmann, in *Lepton Dipole Moments op cit.*, pp 347-406.

B. Lee Roberts, James P. Miller and Yannis K. Semertzidis, in *Lepton Dipole Moments op cit.*, pp 671-698.

Invited Papers ([†] indicates plenary talk)

The Use of Hadronic Atoms to Measure Particle Properties: Measurement of the Magnetic Moments of the Antiproton and Σ^- Hyperon[†], The Institute of Physics (London) Particle Nuclei Interaction Group meeting on Exotic Atoms held at the Rutherford Laboratory, 19 June 1974.

Present Status of (γ, π^0) Experiments[†], the Gordon Research Conference on Photonuclear Reactions, August 18-22, 1980.

π^0 Spectrometers, Canadian Workshop on Instrumentation Around Electron Accelerators, Ottawa, May 11-12, 1981.

Kaonic and Σ^- Atoms: Present Status and Future Directions[†], 30 minute invited paper at the LAMPF II Workshop, (Los Alamos), Feb. 1-4, 1982.

The Σ^- Moment Experiment at BNL, 5th International Symposium on High Energy Spin Physics, Brookhaven National Laboratory, September, 1982.

The horn, the horn... to the New England Section of the American Association of Physics Teachers, Winooski, Vermont, April 1985.

AGS Stopped K^- Experiments, to the Canadian NSERC subcommittee to study the proposal for the DESPINA detector, Toronto, January 1985.

Radiative Processes in Kaon and Hyperon Physics[†] Invited talk at the LAMPF Workshop on Photon and Neutral Meson Physics at Intermediate Energies, Los Alamos, January 7-9, 1987.

Radiative Kaon Capture and Hyperon Weak Radiative Decay, Brookhaven National Laboratory AGS Users Group, 1 May, 1987.

The horn, the horn..., Brookhaven National Laboratory AGS Users Group, 30 April 1987.

Radiative Kaon Capture and Hyperon Weak Radiative Decay, International Symposium on "Strangeness in Nuclear Matter[†]," Bad Honef, W. Germany, 1-5 June 1987.

Radiative Hyperon Decays[†], Excited Baryons 1988 – Troy, NY, 4-6 August 1988.

Radiative Hyperon Processes[†], International Symposium on Hypernuclear and Kaon Physics, Padova, Italy, 12-16 September 1988.

Weak Radiative Hyperon Decays, International Workshop on Weak Interactions and Neutrino Physics, Ginosar, Israel, 9-14 April 1989.

BNL E811, Radiative Kaon Capture and Hyperon Weak Radiative Decay, Hyperon Jamboree held at Snowmass 90 DPF workshop, Snowmass, Colorado, 6 July 1990.

The New Muon ($g-2$) Experiment at Brookhaven[†], Symposium on the Future of Muon Physics, University of Heidelberg, 7-9 May 1991.

Status of the Muon ($g-2$) Experiment, 28th Int. Conf. on High Energy Physics, Warsaw, Poland, July 1996.

New Results on ($g-2$)[†], XIX International Symposium on Lepton and Photon Interactions at High Energies, Stanford University, August 1999.

Present and Future Experiments with the muon ($g-2$) storage ring, HIMUS99 (High Intensity Muon Sources 99), KEK, Tsukuba, Japan, December 1-3, 1999.

The muon lifetime experiments at PSI, HIMUS99 (High Intensity Muon Sources 99), KEK, Tsukuba, Japan, December 1-3, 1999.

New Results on ($g-2$), SLAC Summer Institute, Stanford Linear Accelerator Center, Stanford University, August, 2000.

“Hot Topic” Recent Results from Muon ($g-2$)[†], Kaon 2001, Pisa, Italy, June 2001.

($g-2$) Experiment, Results and Future, Indirect SUSY ($g-2$) Fest at Snowmass 2001, Snowmass Colorado, July 2001.

Ultrahigh Precision with a Muon Storage Ring[†], 8th European Particle Accelerator Conference (EPAC 2002), Paris, France, 3-7 June 2002.

The measurement of Muon ($g-2$)[†], 7th International Workshop on tau-Lepton Physics, Santa Cruz, September 2002.

Overview of Muon ($g-2$) and EDM Experiments (and what we have learned from BNL E821), NP02, International Workshop on Nuclear and Particle Physics at 50 GeV PS, University of Kyoto, Japan, September, 2002.

Summary of the Muon Working Group: The ($g-2$) and EDM Experiments[†], NP02, International Workshop on Nuclear and Particle Physics at 50 GeV PS, University of Kyoto, Japan, September, 2002.

Lepton Dipole Moments[†], Conference on the Intersections between Particle and Nuclear Physics, New York, May 2003.

A Future Muon ($g-2$) Experiment to < 0.1 ppm at a High Flux Muon Facility, NuFact03, Columbia University, June 2003.

Future Muon Dipole Moment Measurements[†], High Intensity Frontier Workshop 2004, Isola d'Elba, June 2004.

Muon Working Group Summary[†], Fermilab Proton Driver Workshop Fermi National Accelerator Laboratory 6 - 9 October 2004.

New results on muon ($g-2$)[†], 16th International Spin Physics Symposium, Trieste, Italy, October 2004.

Muon ($g-2$): Past, Present and Future, NuFact05, LNF Frascati, Italy June, 2005.

Muon Physics Working Group Summary[†], NuFact05, LNF Frascati, Italy, June, 2005.

Muon ($g-2$): Status and Plans for the Future Particles and Nuclei International Conference Santa Fe, October 2005

Muon ($g - 2$)[†] International Workshop: e^-e^+ Collisions from phi to psi, Novosibirsk, March 2006.

Muon ($g - 2$) experiments, past, present and future, Workshop on Dipole Moments in Storage Rings, Brookhaven National Laboratory, June, 2006.

Muon ($g - 2$): Renormalization at work all the way down to the weak scale[†], Progress in Modern Physics, Kyoto, December 2006. (International Symposium to celebrate the centennials of Yukawa and Tomonaga's birth year.)

Precision Measurements with the Muon: Lifetime and Dipole Moments[†], Precision Measurements at Low Energy, Paul Scherrer Institut, January, 2007.

Precision Measurements with the Muon: (Lifetime and) Dipole Moments[†], Workshop on Advanced Physics with Photons, Electrons and Leptons, Center of Advance Science and Technology, Hyogo, Japan, February 2007.

The Muon: A Laboratory for Nuclear and Particle Physics[†], Nuclear Physics Gordon Conference, Newport RI, 19 July 2007.

Search for Lorentz and CPT Violation in Muon Spin Precession[†], Fourth Meeting on CPT and Lorentz Symmetry, Indiana University, 9 August 2007.

Results from the Brookhaven experiment E821, Topical Workshop on The Muon Magnetic Dipole Moment $(g - 2)_\mu$, Glasgow, October 2007.

Muon Physics: An Introduction; NP08, The 4th International Workshop on Nuclear and Particle Physics at J-PARC, Mito, Ibaraki, Japan, 5-7 March 2008.

Muon ($g-2$): Status, and Future Possibilities at J-PARC; NP08 The 4th International Workshop on Nuclear and Particle Physics at J-PARC, Mito, Ibaraki, Japan, 5-7 March 2008.

The muon's magnetic and electric dipole moments[†] at P and T Violation at Low Energies and Related Phenomena Heidelberg June 9-11, 2008.

Experimental prospects for muon physics at a neutrino factory[†], 10th International Workshop on Neutrino Factories, Super beams and Beta beams Valencia-Spain, June 30 - July 5 2008.

The Hadronic Contribution to a_μ , Institute for Nuclear Theory Workshop, University of Washington, 27 October, 2008.

Measurement of the muon EDM, INT Workshop, U. Washington, 29 October, 2008.

Exp: $g-2$ status and future plans[†], Hints for new physics in flavor decays, KEK 21-21 March 2009.

Low Energy Searches for Beyond the Standard Model Physics[†] at the 2009 Meeting of the APS Division of Particles and Fields, Detroit, 29 July 2009.

Colloquia (C) and seminars (S):

1974: Oxford University (S); **1975:** Catholic University of America (S); **1976:** The Kelvin Laboratory - University of Glasgow (S); **1977:** Massachusetts Institute of Technology (S), Boston University (C), University of Massachusetts at Amherst (S), University of Rhode Island (C); **1981:** Catholic University (C); **1982:** College of William and Mary (C); **1985:** Rensselaer Polytechnic Institute (C); **1988:** Boston University (S), Case Western Reserve University (C); **1989:** Paul Scherrer Institute (C), Massachusetts Institute of Technology (S), Virginia Polytechnic Institute and State University (C); **1990:** The University of Illinois (S), University of Maryland (S); **1991:** Indiana University (C), KEK (Japan Laboratory for High Energy Physics) (S), University of Kyoto (S); **1992:** Northeastern University (S); **1996:** M.I.T. (S); **1997:** University of Massachusetts at Amherst (C); **1998:** Tokyo Institute of Technology (S), University of Tennessee (S), College of William and Mary (C), University of Basel (C), Paul Scherrer Institute (S), University of Heidelberg (C); **1999:** Southern Methodist University (C); **2000:** Virginia Polytechnic and State University (C); **2001:** Carnegie Mellon University (C), University of Virginia (C), University of Chicago (S), Stanford Linear Accelerator Center (C), Northeastern University (C), Joint seminar - University of Montreal and McGill University; Massachusetts Institute of Technology (C), Brown University (C), SUNY Stony Brook (C); **2002:** University of Texas at Austin, University of California at San Diego (C), University of Chicago (S), Michigan State University (C); **2004:** Boston University (C), University of New Mexico (C), Imperial College London (S), Oxford University (S), The Rutherford-Appleton Laboratory (S). **2005:** John Adams Institute, Oxford University (S) **2006:** College of William and Mary (C), Hampton University (outreach talk), Virginia State University (outreach talk), KEK (S), Osaka University (S), Kyoto University (S), Paul Scherrer Institute (S). **2007:** Institut Laue-Langevin (S), University of Glasgow (C), University of Pennsylvania (S), University of Tennessee (C); **2008** Brookhaven National Laboratory (special colloquium in celebration of T.L. Trueman's retirement), Los Alamos National Laboratory (S), Fermilab (C), U. Colorado (C)

Papers Published in Conference Proceedings (partial list)

F.L. Milder, E.C. Booth, B.L. Roberts, J. Comuzzi, H. Crannell, *Neutral Pion Photoproduction from Complex Nuclei Near Threshold*, RPI Photopion Symposium, published in *Photopion Nuclear Physics*, Stoler, ed. (Plenum Press, 1979), p. 245.

B.L. Roberts, G.W. Dodson, J.P. Miller, F. O'Brien, D. Tieger, R.J. Powers, N. Colella, R.B. Sutton, M.J. Eckhause, K. Giovanetti, D.W. Hertzog, J.R. Kane, W. Phillips, W.F. Vulcan, R.E. Welsh, R. Whyley, R.G. Winter, and A.R. Kunselman, *The Σ^- Moment Experiment at BNL*. AIP Conference Proc. No. **95**, 1983 (AIP, NY, 1983).

D.R. Tieger, E.C. Booth, J.P. Miller, B.L. Roberts, G.W. Dodson, S. Gilad, R.P. Redwine, *Coherent π^0 Photoproduction on ^{12}C and ^4He in the Delta Resonance Region*, International Conference on Intermediate Energy Physics, Florence, Italy, August, 1983.

B.L. Roberts, *Search for T and CPT Violation in the Neutral Kaon System*, Intersections between Particle and Nuclear Physics, AIP Conf. Proc. **150**,993-997, (1986).

B.L. Roberts, E.C. Booth, W. Fickinger, K.P. Gall, M.D. Measday, N.P. Hessey, D. Horváth, J. Lowe, E.K. McIntyre, D.F. Measday, J.P. Miller, A.J. Noble, D.K. Robinson, M. Sakitt, M. Salomon, J. Skelly and D.A. Whitehouse, *Radiative Kaon Capture and Hyperon Weak Radiative Decay*, Nucl. Phys. **A479**, 75c (1988).

A.J. Noble, E.C. Booth, W. Fickinger, K.P. Gall, M.D. Hasinoff, N.P. Hessey, D. Horváth, J. Lowe, E.K. McIntyre, D.F. Measday, J.P. Miller, B.L. Roberts, D.K. Robinson, M. Sakitt, M. Salomon, J. Skelly and D.A. Whitehouse, Λ and Σ^+ *Weak Radiative Decay*, Conference on the Intersection of Particle and Nuclear Physics, Rockport ME, 14-19 May, 1988, AIP Conf. Proc. **176**, 842 (1988).

E.K. McIntyre, E.C. Booth, W. Fickinger, K.P. Gall, M.D. Hasinoff, N.P. Hessey, D. Horváth, J. Lowe, D.F. Measday, J.P. Miller, A.J. Noble, B.L. Roberts, D.K. Robinson, M. Sakitt, M. Salomon, J. Skelly and D.A. Whitehouse, *Radiative Kaon Capture*, Conference on the Intersection of Particle and Nuclear Physics, Rockport ME, 14-19 May 1988, AIP Conference Proc. **176**, 673 (1988)

J.P. Miller, E.J. Austin, F. O'Brien, B.L. Roberts, G.W. Dodson, R.J. Powers, R.B. Sutton, M. Eckhause, P.P. Guss, D.W. Hertzog, D. Joyce, J.R. Kane, W.C. Phillips, W.F. Vulcan, R.E. Welsh, R.J. Whyley, R.G. Winter and A.R. Kunselman, *Exotic Atom Measurement of the Magnetic Dipole Moment of the Sigma Minus*, High Energy Spin Physics, September 1988, AIP Conference Proc. **187**, 361 (1989).

D. Horváth, M.D. Hasinoff, D.F. Measday, A.J. Noble, C.E. Waltham, E.C. Booth, K.P. Gall, E.K. McIntyre, J.P. Miller, B.L. Roberts, D.A. Whitehouse, N.P. Hessey, J. Lowe, W.J. Fickinger, D.K. Robinson, M. Sakitt, J.F. Skelly, M. Salomon, A. Hallin, B. Bassalleck, K.D. Larson, and D.M. Wolfe, *Experimental Study of Radiative Hyperon Processes following Kaon Capture on the Proton*, Czech. J. Phys. **B** 160 (1989).

B.L. Roberts, E.C. Booth, K.P. Gall, E.K. McIntyre, J.P. Miller, D.A. Whitehouse, J. Lowe, N.P. Hessey, M.D. Hasinoff, D.F. Measday, A.J. Noble, C.E. Waltham, M. Sakitt, W.J. Fickinger, D.K. Robinson, D. Horváth, B. Bassalleck, J.R. Hall, K.D. Larson, D.M. Wolfe, A.L. Hallin and M. Salomon, *Radiative Hyperon Processes*, Nuovo Cim. **102 A**, N. 1, 145 (1989).

M. Atiya, E. Blackmore, G. Bock, D. Bryman, M. Cooper, H. Gordon, L. Littenberg, W. Louis, H. Lubatti, K. McFarlane, K. Nishikawa, J. Ritchie, L. Roberts, T. Shinkawa, M. Sivertz and A.J.S. Smith, *twelveit Kaon Physics in the 1990's: Rare Decays and CP Violation*, Proc. Summer Study on H.E.P. in the 1990s, (World Scientific, 1989) p. 357.

D. Horváth, B. Bassalleck, J.R. Hall, K.D. Larson, D.M. Wolfe, N.P. Hessey, J. Lowe, E.C. Booth, K.P. Gall, E.K. McIntyre, J.P. Miller, B.L. Roberts, D.A. Whitehouse, M. Sakitt, D.K. Robinson, A.L. Hallin, M. Salomon, M.D. Hasinoff, A.J. Noble and C.E. Waltham, *Radiative Hyperon Processes Following Kaon Capture on Proton*, to be published in the proceedings of the Third International Symposium on Pion-Nucleon and Nucleon-Nucleon Physics, Gatchina, USSR April 1989.

E.K. McIntyre, E.C. Booth, W.J. Fickinger, K.P. Gall, M.D. Hasinoff, N.P. Hessey, D. Horváth, J. Lowe, D.F. Measday, J.P. Miller, A.J. Noble, B.L. Roberts, D.K. Robinson, M. Sakitt, M. Salomon, J.F. Skelly and D.A. Whitehouse, *Radiative Kaon Capture in Hydrogen*, Excited Baryons 1988, Proceedings ed. G. Adams, N.C. Mukhopadhyay and P. Stoler, World Scientific, 434-438 (1989).

B.L. Roberts, *Radiative Hyperon Decay*, Excited Baryons 1988, Proceedings ed. G. Adams, N.C. Mukhopadhyay and P. Stoler, World Scientific, 410-410 (1989).

B.L. Roberts, B. Bassalleck, E.C. Booth, W.J. Fickinger, K.P. Gall, J.R. Hall, A.L. Hallin, M.D. Hasinoff, N.P. Hessey, D. Horváth, K.D. Larson, J. Lowe, E.K. McIntyre D.F. Measday, J.P. Miller, A.J. Noble, D.K. Robinson, M. Sakitt, M. Salomon, C.E. Waltham, D.A. Whitehouse, D.M. Wolfe, *Weak Radiative Hyperon Decays*, Int. Symp. on Weak Interactions and Neutrino Physics, Ginosar, Israel, April 1989, Nucl. Phys. **B** (Proc. Suppl.) **13**, 449 (1990).

T. Coan, et al., *The Manufacturing Engineering of a Hermetic Cast Fiber Calorimeter*, Symposium on Detector Research and Development for the Superconducting Super Collider, Fort Worth, TX, Oct. 1990.

D. Higbey, et al., *Cast Lead-Eutectic Solid and Liquid Scintillating Fiber Shower Calorimeters*, Symposium on Detector Research and Development for the Superconducting Super Collider, Fort Worth, TX, Oct. 1990.

C. Santoni, et al, *Status and First Data from CPLEAR*, Workshop on Testing CPT and Studying CP-violation at a ϕ Factory, UCLA, 20-27 April, 1990, to be published in Phys. Letters B.

G. Backenstoss, et al, *Aims and Status of the CPLEAR Experiment*, Workshop on Science at the Kaon Factory, TRIUMF, Vancouver, 23-28 July, 1990.

R. Gamet, et al, *Experimental Status and Preliminary Results on CP Violation from the CPLEAR Collaboration at CERN*, 25th International Conference on High Energy Physics, Singapore, 2-8 August, 1990.

R. Adler, et al., (CP-LEAR Collaboration), *Initial Performance of CPLEAR*, Low Energy Antiproton Physics 90, Stockholm 2-6 July 1990, P. Carlson, A. Kerek and S. Szilagyi ed., World Scientific, 414-420, (1991).

L.M. Barkov, et al., *The Anomalous Magnetic Moment of the Muon*, Proceedings of the Int. Symp. on High Energy Spin Physics, K.-H. Althoff, W. Meyer ed., Springer-Verlag, 367-382, (1991).

B. Lee Roberts, *The new muon ($g-2$) experiment at Brookhaven*, Z. Phys. **C 56**, S101 (1992). B.L. Roberts, et al., *Status of the muon ($g-2$) Experiment*, Proc. of the 28th Int. Conf. on HEP, Warsaw 1996, p 1035, (1997) Z. Ajduk and A.K. Wroblewski ed.

J.P. Miller, et al., Proceedings of the Sixth Conference on the Intersections of Particle and Nuclear Physics, (Big Sky, May 1997) AIP Conf. Proc. 412, T.W. Donnelly ed. 792-800, (1997)

The Anomalous Magnetic Moment of the Muon, By the Muon- $g-2$ Collaboration (R.M. Carey et al.). 1998. Prepared for Workshop on Frontier Tests of Quantum Electrodynamics and Physics of the Vacuum, Sandansky, Bulgaria, 9-15 Jun 1998. In Sandansky 1998, Frontier tests of QED and physics of the vacuum, 97-116.

Status of the $g-2$ Experiment at BNL, Given at 5th International Workshop on Tau Lepton Physics (TAU 98), Santander, Spain, 14-17 Sep 1998. Published in Nucl. Phys. Proc. Suppl. **76** 253-260 (1999)

Contribution of CPLEAR to the Physics of the Neutral Kaon System, By CPLEAR Collaboration (A. Angelopoulos et al.). 1999. Given at 3rd International Conference on

Hyperons, Charm and Beauty Hadrons, Genoa, Italy, 30 Jun - 3 Jul 1998. Published in Nucl.Phys.Proc.Suppl.75B:267-273,1999

B. Lee Roberts, *Status of the Muon ($g - 2$) Experiment*, Proceedings of the XIX International Symposium on Lepton and Photon Interactions at High Energies, M. Peskin, ed., World Scientific, 2000, pps. 386-397, and <http://www.slac.stanford.edu/econf/C99-08-09/proceedings.html>

B. Lee Roberts, *Ultrahigh precision with a muon storage ring*, Proceedings of the European Particle Accelerator Conference, Paris, 2002, pps. 154-158, (2002).

B.L. Roberts, et al., Muon ($g - 2$) collaboration, *Measurement of the Muon ($g - 2$) Value* Nucl. Phys. B 123 214-218 (2003).

B. Lee Roberts, *Lepton Dipole Moments*, Proc. Conf. on Intersections between Particle and Nuclear Physics, Am. Inst. of Phys. Conf. Proc. **698**:13-22 (2004).

B.Lee Roberts (for the ($g - 2$) collaboration) *Results and Future Prospects for Muon ($g - 2$)* Plenary talk in the Proceedings of the 16th International Spin Physics Symposium (SPIN 2004), Trieste, Italy, Oct 2004. K. Aulenbacher, B. Bradamante, A. Bressan and A. Martin, eds. World Scientific (2005) pps 22-29.

B. Lee Roberts Future Muon Dipole Moment Measurements. Invited talk at High Intensity Frontier Workshop (HIF 04), La Biodola, Isola de'Elba, Italy, 5-8 Jun 2004. Published in Nucl.Phys.Proc.Suppl.147:69-77,2005

(B.L. Roberts for the collaboration) "Muon ($g-2$): Past, present and future", Particles and Nuclei International Conference (PANIC 05), Santa Fe, New Mexico, 24-28 Oct 2005. Published in AIP Conf.Proc. **842**, 912-914 (2006).

"Muon ($g-2$): Past, present and future." By E821 Collaboration and E969 Collaboration (B. Lee Roberts for the collaboration). nuFact2005, Published in Nucl. Phys. Proc. Suppl. 155:372-374,2006.

B.Lee Roberts (Boston U.) , Marco Grassi (INFN, Pisa) , Akira Sato (Osaka U.). 8pp. "Intense muon physics working group summary." Published in Nucl. Phys. Proc. Suppl. **155**, 123-130 (2006).

B.Lee Roberts, "Experimental prospects for muon physics at a neutrino factory", Plenary talk, NuFact08, Published on-line <http://pos.sissa.it/cgi-bin/reader/conf.cgi?confid=74>

B.Lee Roberts, "The Next-generation Muon ($g - 2$) Experiment", Plenary talk, NuFact08, Published on-line <http://pos.sissa.it/cgi-bin/reader/conf.cgi?confid=74>

E-published papers:

William J. Marciano, B.Lee Roberts, *Status of the Hadronic Contribution to the Muon ($g - 2$) Value*, May 2001. 17pp. e-Print Archive: hep-ph/0105056 (<http://arxiv.org/abs/hep-ph/0105056>) (56 citations)

Physics at a future Neutrino Factory and super-beam facility, By ISS Physics Working Group (A. Bandyopadhyay et al.). S.F. King, K. Long, Y. Nagashima, B.L. Roberts, and

O. Yasuda Editors. Oct 2007. 370pp. e-Print: arXiv:0710.4947 [hep-ph]. This document will be refereed and published by Reports on Progress in Physics.

The Physics case for the new muon ($g-2$) experiment, David W. Hertzog, James P. Miller, Eduardo de Rafael, B. Lee Roberts, Dominik Stöckinger, May 2007. 18pp. e-Print: arXiv:0705.4617 [hep-ph]

Theses Supervised

Ph.D Thesis, *High-Z Kaonic and Sigma Hyperonic Atoms* F.E. O'Brien, Jr., April '85.

Ph.D. Thesis, *Radiative Kaon Capture at Rest on Hydrogen*, David A. Whitehouse, October 1988.

Ph.D Thesis, *Radiative Kaon Capture at Rest in Deuterium*, Kenneth P. Gall, July 1988, (Second Reader)

Ph.D Thesis, *Tests of CP,T and CPT from Neutral Kaon Semileptonic Decays at The CPLEAR Experiment*, Apollo T.-N. Go, January 1995 (Second Reader)

Ph.D Thesis, *A Search for CP Violation in the Decays of the Neutral Kaons to a Positively Charged Pion, a Negatively Charged Pion, and a Neutral Pion at the CPLEAR Experiment*, David Zimmerman, January, 1996 (Second Reader)

Ph.D Thesis, *Tests of Discrete Symmetries in the Semileptonic Decays of Neutral Kaons at CPLEAR*, Maxwell Benjamin Chertok, June, 1996 (Second Reader)

Ph.D Thesis, *Measurement of the Three Pion Production in Electron-Positron Annihilations for the Hadronic Contribution to the Anomalous Magnetic Moment of the Muon*, Douglas Hodsdon Brown, May 1997 (Second Reader).

Ph.D Thesis, *A New Precision Measurement of the Anomalous Magnetic Moment of the Positive Muon*, Alexei Vitalyevich Trofimov, January 2002 (Second Reader).

Ph.D. Thesis, *Measurement of the Anomalous Magnetic Moment of the Negative Muon to 0.7 parts per million*, Jonathan M. Paley, April 2004 (first reader).

Ph.S. Thesis *Lorentz/CPT Invariance Test in the BNL Muon ($g - 2$) Data*, by Xiaobo Huang, December 2007.

Senior Distinction Thesis, *Nuclear Gamma Rays Following Negative Pion, Kaon, and Sigma Hyperon Capture on High Z Nuclei*, by D. Patrick Russell, III, April, 1985.

Senior Distinction Thesis, *The Physics of the Didjeridu*, Graham C. Wiggins, April, 1985.

Senior Distinction Thesis, *Development of a Range Spectrometer to Tag Σ^+ Production from Stopping Kaons*, David W. Warner, April 1986.