CURRICULUM VITÆ

RICHARD I. STEINBERG

August 2016

Address:

Drexel University
Department of Physics
Philadelphia PA 19104
email: steinberg at drexel dot edu
tel: (215) 895-2708

Education:

B.A., Swarthmore College, physics
M.S., M.Phil., Ph.D., Yale University, physics

Experience:

Professor, Drexel University Department of Physics, astrophysics, experimental nuclear and particle physics; joined the department in 1984.
Founder of the Drexel experimental particle physics group. Career external funding $2.5M.

$ 60,000; Feb. 1, 1986–Jan. 31, 1987.

$ 20,000; Aug. 11, 1986–Aug. 10, 1987.

$125,000; Feb. 1, 1987–Jan. 31, 1988.

$210,000; Feb. 1, 1988–Jan. 31, 1989.

$170,000; Feb. 1, 1989–Jan. 31, 1990.

$160,000; Feb. 1, 1990–Jan. 31, 1991.

$295,000; Feb. 1, 1991–Jan. 31, 1992.

$242,000; Feb. 1, 1992–Jan. 31, 1993.

$177,000; Feb. 1, 1993–Jan. 31, 1994.

$158,400; Feb. 1, 1994–Jan. 31, 1995.

$220,000; Feb. 1, 1995–Jan. 31, 1996.

$220,000; Feb. 1, 1996–Jan. 31, 1997.

$154,000; Feb. 1, 1997–Jan. 31, 1998.

$164,000; Feb. 1, 1998–Jan. 31, 1999.

$ 80,000; Feb. 1, 1999–Jan. 31, 2000.

Current work:

- **Astrophysics**. We are operating an observatory for research in astrophysics and for teaching, benefiting from a location 85 mi north of Philadelphia, free from the intense light pollution that would otherwise interfere with study of all but the brightest objects. The **Blue Mountain Vista Observatory** is located at a dark-sky site in New Ringgold, PA near Blue Mountain. Our observatory is equipped with a state-of-the-art 12.5" f/8 Hyperion telescope and a 16 megapixel Apogee U16M astrocamera. The telescope is mounted on a fully robotic Paramount ME equatorial mount and can be operated remotely via the internet. The extremely wide 50

arcmin x 50 arcmin field of view allows efficient surveys of distant objects, such as quasars. The initial fields of research for this instrument are studies of quasar variability and imaging of trans-Neptunian objects such as 134340 Pluto, 136199 Eris, 136472 Makemake, 136108 Haumea and 38628 Huya. Some of the more recent work accomplished at the observatory is summarized on our web site http://www.physics.drexel.edu/˜steinberg/Astro Welcome.html . As of March 2014, more than 6000 individuals had visited the site.

Older work:

- MACRO (**M**onopole, **A**strophysical Neutrino and **C**osmic **R**ay **O**bservatory), a deep underground 10,000-m^2sr high energy particle detector which searched for the magnetic monopoles predicted by grand unification theory. MACRO also studied cosmic-ray and astrophysical neutrinos, cosmic-ray muons and a variety of hypothetical particles which may have been created in the early universe. The modules of the 750-ton liquid scintillation system were based on our design. We also developed and produced the high performance liquid scintillation material for MACRO. The experiment is now completed and has yielded many new physics results.
- The CHOOZ neutrino experiment, a test of neutrino oscillations at a range of one kilometer from a pair of large power reactors in the Ardennes, France. We built an underground one hundred ton liquid scintillation neutrino detector for this experiment in collaboration with the Collège de France (Paris), LAPP (Annecy), Kurchatov Institute (Moscow), Pisa University, Trieste University, UNM (Albuquerque), and UC (Irvine). We were co-spokesperson for the experiment (with Y. Declais, Annecy and C. Bemporad, Pisa). The experiment has been completed. Results setting stringent limits on $\nu_e \to \nu_x$ oscillations have been published.

Research Assistant Professor, University of Pennsylvania Physics Department, experimental particle physics, 1976–84.

- Pioneered in study of rare processes and conservation laws in particle physics using deep underground detectors.
- Developed large area, low cost liquid scintillation technique extremely well suited to underground rare particle searches. Designed and implemented the 150-ton Homestake Large Area Scintillation Detector, which became a prototype for MACRO (see above).
- Played major role in the design, construction and physics exploitation of a 300-ton water Čerenkov detector one mile underground in the Homestake Mine, Lead, South Dakota. Principal physics results: new limits on proton lifetime and baryon number nonconservation; limits on rate of neutrino and antineutrino bursts from gravitational collapse of stars; measurement of cosmic ray composition and interactions of 1000-TeV cosmic ray primaries using high energy muons; new limits on rate of neutron-antineutron oscillations in nuclei.
- Introduced radiochemical and geochemical methods for testing nucleon stability and established new decay-mode independent limits on nucleon lifetime using these methods.

Assistant Professor, University of Maryland Department of Physics and Astronomy, experimental nuclear and particle physics, 1974–76.

- Performed sensitive test of electric charge conservation by searching for decay of electrons, improving previous work 100-fold.
- Initiated work on decay-mode independent tests of nucleon stability, obtaining funding from the Research Corporation.

Research Associate, Institut des Sciences Nucléaires, Grenoble, experimental weak interaction physics, 1971–74.

- Secured funding and necessary approvals from French authorities for time-reversal experiment developed previously at Yale University. Performed experiment leading to definitive proof of time-reversal invariance in beta decay. This result has been quoted in many text books and was cited by Professor Cronin in his Nobel Prize acceptance speech in 1980.

Instructor, Yale University Physics Department, experimental nuclear and particle physics, 1969–71.

- Developed sensitive experimental method to study time reversal invariance in weak interactions using beams of polarized neutrons. Organized collaboration with physicists at Brookhaven National Laboratory and Institut des Sciences Nucléaires (Grenoble) to perform experiment (see above).

Research Assistant, Yale University Physics Department, experimental atomic and nuclear physics, 1966–69.

Ph.D. thesis title:
D(d, p)T Reaction with a Polarized Deuteron Beam
Adviser: Professor Vernon W. Hughes

Thesis consisted of development of an atomic beam magnetic resonance apparatus to produce beams of polarized deuterons and the measurement of the vector and tensor analyzing powers of the D($\overrightarrow{d}$, p)T reaction at an incident energy of 150 KeV.

Professional Activities:

Chair, *Workshop on Future Experiments at the IMB Fairport Underground Laboratory*, University of New Mexico, Albuquerque, September 1992
Chair, *Franklin Symposium in Celebration of the Discovery of the Neutrino*, Philadelphia, April 1992
United States Department of Energy, proposal referee
National Science Foundation, proposal referee
International Science Foundation, proposal referee
SCIENCE magazine, nuclear and particle physics reviewer
Physical Review Letters, particle physics reviewer
Physical Review, particle physics reviewer
Particle Data Project, consultant on stable particles
International Science Foundation, proposal referee
Consultant, E.I. duPont Corp., 1989
Visiting Staff Member, Los Alamos National Laboratory, 1985-87
Organizing Committee Member and Co-editor of the Proceedings, *Workshop on Very High Energy Cosmic Ray Interactions*, Philadelphia, April 1982
American Physical Society
American Physical Society Division of Particles and Fields
American Physical Society Division of Nuclear Physics
American Physical Society Division of Astrophysics

Honors and Awards:

Listed in *Who's Who in American Education*
Department of Energy Principal Investigator (1985-2001)
Listed in *Who's Who in Science and Engineering*
Faculty Research Award, Drexel University
National Science Foundation International Travel Award
Research Corporation Grantee
Faculty Research Award, University of Maryland
NATO Senior Fellowship
Chercheur Associé, CNRS, France
National Science Foundation Postdoctoral Fellowship
Yale Graduate Fellowship
Elected to Phi Beta Kappa and Sigma Xi
Graduated with Distinction in Physics, Swarthmore College
National Chemistry Achievement Award
National Merit Scholarship

External Research Support:

(since 1998)

- *Experimental Particle Physics*,
  United States Department of Energy, $154,000; Feb. 1, 1997–Jan. 31, 1998.
- *Experimental Particle Physics*,
  United States Department of Energy, $164,000; Feb. 1, 1998–Jan. 31, 1999.
- *Experimental Particle Physics*,
  United States Department of Energy, $80,000; Feb. 1, 1999–Jan. 31, 2001.

Research Interests:

Astronomy and Astrophysics. Experimental elementary particle physics. Neutrino oscillations. Magnetic monopoles. Solar neutrinos. Experimental tests of grand unified theories. Tests of conservation laws in nuclear and particle physics. Proton decay. Time reversal invariance. Lepton conservation. Charge conservation. High energy muon and neutrino interactions and sources.

Refereed Journal Publications:

1. **Measurement of Polarization Effects in the D(d,p)T Reaction at 140 KeV**, R.I. Steinberg, C.W. Drake and D.C. Bonar, Phys. Rev. **186** (1969) 1059.
2. **New Experimental Limit on T Invariance in Polarized Neutron Beta Decay**, R.I. Steinberg, P. Liaud, B. Vignon and V.W. Hughes, Phys. Rev. Lett. **33** (1974) 41.
3. **Experimental Test of Charge Conservation and the Stability of the Electron**, R.I. Steinberg, K. Kwiatkowski, W. Maenhaut and N.S. Wall, Phys. Rev. **D12** (1975) 2582.
4. **Détecteurs à Couche Mince de INa(Tl) pour Protons de Faible Énergie**, P. Liaud, R.I. Steinberg and B. Vignon, Nucl. Instrum. Meth. **125** (1975) 325.
5. **A Two-Coil Spin Flipper for Beams of Polarized Slow Neutrons**, P. Liaud, R.I. Steinberg and B. Vignon, Nucl. Instrum. Meth. **125** (1975) 7.
6. **Search for a Nonzero Triple-Correlation Coefficient and New Experimental Limit on T Invariance in Polarized Neutron Beta Decay**, R.I. Steinberg, P. Liaud, B. Vignon and V.W. Hughes, Phys. Rev. **D13** (1976) 2469.
7. **A Proposed Radiochemical Approach to the Nucleon Lifetime**, R.I. Steinberg and W. Maenhaut, Lett. Nuovo Cimento **15** (1976) 93.
8. **Analysis of the ^{12}C(d,^{3}He)^{11}Be($g.s.$) Reaction at 80 MeV**, J.P. Didelez, C.C. Chang, N.S. Chant, H.D. Holmgren, R.I. Steinberg and J. Wu, Phys. Rev. **C13** (1976) 1388.
9. **Nucleon Stability: A Geochemical Test Independent of Decay Mode**, J.C. Evans, Jr. and R.I. Steinberg, Science **197** (1977) 989.
10. **Experimental Test of Baryon Conservation: A New Limit on the Nucleon Lifetime**, M. Cherry, M. Deakyne, K. Lande, C.K. Lee, R.I. Steinberg and B. Cleveland, Phys. Rev. Lett. **47** (1981) 1507.
11. **Neutrino Bursts from Collapsing Stars — Results from the Homestake Burst Search**, M. Cherry, M. Deakyne, T. Daily, K. Lande, C.K. Lee, R.I. Steinberg and E.J. Fenyves, J. Phys. G: Nucl. Phys. **8** (1982) 879.
12. **Multiple Muons in the Homestake Underground Detector**, M. Cherry, M. Deakyne, K. Lande, C.K. Lee, R.I. Steinberg, B. Cleveland and E.J. Fenyves, Phys. Rev. **D27** (1983) 1444.
13. **Experimental Test of Baryon Conservation: A New Limit on Neutron-Antineutron Oscillations in Oxygen**, M. Cherry, K. Lande, C.K. Lee, R.I. Steinberg and B. Cleveland, Phys. Rev. Lett. **50** (1983) 1354.
14. **MACRO, A Large Area Detector at the Gran Sasso Laboratory**, The MACRO Collaboration, Nuovo Cim. **9C**, 2 (1986) 281.
15. **The MACRO Detector at the Gran Sasso Laboratory**, The MACRO Collaboration, Nucl. Instrum. Meth. **A264** (1988) 18.

16. **The Track Etch Detector of the MACRO Experiment**, The MACRO Collaboration, Nucl. Tracks Radiat. Meas. **15** (1988) 331.
17. **Borex: Solar Neutrino Experiment via Weak Neutral and Charged Currents in Boron-11**, The Borex Collaboration, Solar Phys. **128** (1990) 61.
18. **Simultaneous Observation of Extensive Air Showers and Deep-Underground Muons at the Gran Sasso Laboratory**, The MACRO Collaboration, Phys. Rev. **D42** (1990) 1396.
19. **Study of Penetrating Cosmic Ray Muons and Search for Large Scale Anisotropies at the Gran Sasso Laboratory**, The MACRO Collaboration, Phys. Lett. **B249** (1990) 149.
20. **Arrival Time Distributions of Very High Energy Cosmic Ray Muons in MACRO**, The MACRO Collaboration, Nucl. Phys. **B370** (1992) 432.
21. **A Liquid Scintillator Detector for Solar Neutrinos**, The BOREX Collaboration, Nucl. Instrum. Meth. **A315** (1992) 229-235.
22. **Study of the Ultra-High Energy Primary Cosmic Ray Composition with the MACRO Experiment**, The MACRO Collaboration, Phys. Rev. **D46** (1992) 895.
23. **Search for Neutrino Bursts from Collapsing Stars with the MACRO Detector**, The MACRO Collaboration, Astropart. Phys. **1** (1992) 11-25.
24. **First Supermodule of the MACRO Detector at Gran Sasso**, The MACRO Collaboration, Nucl. Instrum. Meth. **A324** (1992) 337-362.
25. **Search for Nuclearites Using the MACRO Detector**, The MACRO Collaboration, Phys. Rev. Lett. **69** (1992) 1860.
26. **Measurement of the Muon Decoherence Function with the MACRO Detector at Gran Sasso**, The MACRO Collaboration, Phys. Rev. **D46** (1992) 4836.
27. **Franklin Symposium Proceedings: In Celebration of the Discovery of the Neutrino**, eds. C.E. Lane and R.I. Steinberg (World Scientific, Singapore, 1992).
28. **Muon Astronomy with the MACRO Detector**, The MACRO Collaboration, Astrophys. J. **412** (1993) 301.
29. **Neutrino Physics in MACRO at Gran Sasso**, The MACRO Collaboration, Nucl. Phys.**B31** (1993) 437.
30. **Search for Slowly Moving Magnetic Monopoles with the MACRO Detector**, The MACRO Collaboration, Phys. Rev. Lett. **72** (1994) 608-612.
31. **Coincident Observation of Air Cerenkov Light by a Surface Array and Muon Bundles by a Deep Underground Detector**, The MACRO and GRACE Collaborations, Phys. Rev. **D50** (1994) 3046-3058.
32. **Study of the Primary Cosmic Ray Composition Around the Knee of the Energy Spectrum**, The EAS-TOP and the MACRO Collaborations, Phys. Lett. **B337** (1994) 376-382.
33. **Vertical Muon Intensity Measured with MACRO at the Gran Sasso Laboratory**, The MACRO Collaboration, Phys. Rev. **D52** (1995) 3793-3802.
34. **Performance of the MACRO Streamer Tube System in the Search for Magnetic Monopoles**, The MACRO Collaboration, Astropart. Phys. **4** (1995) 33-43.
35. **Atmospheric Neutrino Flux Measurement Using Upgoing Muons**, The MACRO Collaboration, Phys. Lett. **B357** (1995) 481-486.

36. **Search for Neutrinos from the Sun and the Earth with the MACRO Detector**, The MACRO Collaboration, Nucl. Phys. **B48** (1996) 87.
37. **High-Energy Cosmic Ray Physics with the MACRO Detector at Gran Sasso: Part 1. Analysis Methods and Experimental Results**, The MACRO Collaboration, Phys. Rev. **D56** (1997) 1407-1417.
38. **High-Energy Cosmic Ray Physics with the MACRO Detector at Gran Sasso: Part 2. Primary Spectra and Composition**, The MACRO Collaboration, Phys. Rev. **D56** (1997) 1418-1436.
39. **Performance of the MACRO Liquid Scintillator in the Search for Magnetic Monopoles with** $10^{-3} < \beta < 1$, The MACRO Collaboration, Astropart. Phys. **6** (1997) 113-128.
40. **Seasonal Variations in the Underground Muon Intensity as Seen by MACRO** , The MACRO Collaboration, Astropart. Phys. **7** (1997) 109-124.
41. **Magnetic Monopole Search with the MACRO Detector at Gran Sasso**, The MACRO Collaboration, Phys. Lett. **B406** (1997) 249-255.
42. **Real Time Supernova Neutrino Burst Detection with MACRO**, The MACRO Collaboration, Astropart. Phys. **8** (1998) 123-133.
43. **Initial Results from the CHOOZ Long Baseline Reactor Neutrino Oscillation Experiment**, The CHOOZ Collaboration, http://arXiv.org/ abs/hep-ex/9711002, Phys. Lett. **B420** (1998) 397-404.
44. **The Observation of Upgoing Charged Particles Produced by High Energy Muons in Underground Detectors**, The MACRO Collaboration, Astropart. Phys. **9** (1998) 105-117.
45. **The Measurement of the Atmospheric Neutrino-Induced Upgoing Muon Flux Using MACRO**, The MACRO Collaboration, http://arXiv.org/ abs/hep-ex/9807005, Phys. Lett. **B434** (1998) 451-457.
46. **Observation of the Shadowing of Cosmic Rays by the Moon Using a Deep Underground Detector**, The MACRO Collaboration, http://arXiv.org/ abs/hep-ex/9807006, Phys. Rev. **D59** (1999) 012003.
47. **Measurement of the Energy Spectrum of Underground Muons at Gran Sasso with a Transition Radiation Detector**, The MACRO Collaboration, http://arXiv.org/ abs/hep-ex/9807009, Astropart. Phys. **10** (1999) 11-20.
48. **Nuclearite Search with the MACRO Detector at Gran Sasso**, The MACRO Collaboration, http://arXiv.org/ abs/hep-ex/9904031, Euro. Phys. Jrnl. **C13** (2000) 453-458.
49. **High Statistics Measurement of the Underground Muon Pair Separation at Gran Sasso.** The MACRO Collaboration, http://arXiv.org/ abs/hep-ex/9901027, Phys. Rev. **D60** (1999) 032001.
50. **Limits on Neutrino Oscillations from the CHOOZ Experiment**, The CHOOZ Collaboration, http://arXiv.org/ abs/hep-ex/9907037, Phys. Lett. **B466** (1999) 415-430.
51. **Relevance of the Hadronic Interaction Model in the Interpretation of Multiple Muon Data as Detected with the MACRO Experiment**, The MACRO Collaboration, Nucl. Phys. Proc. Suppl. **75A** (1999) 265-268.
52. **Results from Chooz**, The CHOOZ Collaboration, Nucl. Phys. Proc. Suppl. **77** (1999) 159-165.

53. **Search for Magnetic Monopoles with Nuclear Track Detectors**, The MACRO Collaboration, http://arXiv.org/ abs/hep-ex/9909012, Nucl. Phys. Proc. Suppl. **85** (2000) 227-230.
54. **Atmospheric Neutrino Physics with the MACRO Detector**, The MACRO Collaboration, http://arXiv.org/ abs/hep-ex/9908066, Nucl. Phys. Proc. Suppl. **85** (2000) 37-43.
55. **Underground Muon Physics with the MACRO Experiment**, The MACRO Collaboration, http://arXiv.org/ abs/hep-ex/0002051, Nucl. Phys. Proc. Suppl. **85** (2000) 349-354.
56. **Atmospheric Neutrino Oscillations in MACRO**, The MACRO Collaboration, Nucl. Phys. **A663** (2000) 779-782.
57. **Search for Massive Rare Particles with the MACRO Detector at Gran Sasso**, The MACRO Collaboration, http://arXiv.org/ abs/hep-ex/0009002, Nucl. Phys. Proc. Suppl. **85** (2000) 221-226.
58. **Chooz, Palo Verde, Krasnoyarsk**, The CHOOZ Collaboration, http://arXiv.org/abs/hep-ex/9910042, Nucl. Phys. Proc. Suppl. **87** (2000) 284-287.
59. **Neutrino Astronomy and Search for WIMPs with MACRO**, The MACRO Collaboration, Nucl. Phys. Proc. Suppl. **87** (2000) 108-110.
60. **Search for Magnetic Monopoles with MACRO**, The MACRO Collaboration, Nucl. Phys. Proc. Suppl. **87** (2000) 498-499.
61. **Limits on Dark Matter Wimps Using Upward Going Muons in the Macro Detector**, The MACRO Collaboration, http://arXiv.org/ abs/hep-ex/9812020, Phys. Rev. **D60** (1999) 082002.
62. **Low Energy Atmospheric Muon Neutrinos in MACRO**, The MACRO Collaboration, http://arXiv.org/ abs/hep-ex/0001044, Phys. Lett. **B478** (2000) 5-13.
63. **Determination of Neutrino Incoming Direction in the CHOOZ Experiment and Supernova Explosion Location by Scintillator Detectors**, The CHOOZ Collaboration, http://arXiv.org/ abs/hep-ex/9906011, Phys. Rev. **D61** (2000) 012001.
64. **A Search for Lightly Ionizing Particles with the MACRO Detector**, The MACRO Collaboration, http://arXiv.org/ abs/hep-ex/0002029, Phys. Rev. **D62** (2000) 052003.
65. **Neutrino Astronomy with the MACRO Detector**, The MACRO Collaboration, astro-ph/0002492, Astrophys. J. **546** (2001) 1038-1054.
66. **Matter Effects in Upward Going Muons and Sterile Neutrino Oscillations**, The MACRO Collaboration, http://arXiv.org/abs/hep-ex/0106049, Phys. Lett. **B517** (2001) 59-66.
67. **Search for Massive Rare Particles with the MACRO Track-Etch Detector at Gran Sasso**, The MACRO Collaboration, http://arXiv.org/ abs/hep-ex/0106049, Radiat. Meas. **34** (2001) 259-263.
68. **A Combined Analysis Technique for the Search for Fast Magnetic Monopoles with the MACRO Detector**, The MACRO Collaboration, http://arXiv.org/ abs/hep-ex/0110083, Astropart. Phys. **18** (2002) 27-41.
69. **ORLAND: A Proposed Neutrino Facility at the Oak Ridge National Laboratory**, The ORLAND Collaboration, Phys. Atom. Nucl. **63** (2000) 1007-1011.
70. **Search for Cosmic Ray Sources Using Muons Detected by the MACRO Experiment**, The MACRO Collaboration, http://arXiv.org/abs/hep-ph/0204188, Astropart. Phys. **18** (2003) 615-627.

71. **Final Results of Magnetic Monopole Searches with the MACRO Experiment**, The MACRO Collaboration, http://arXiv.org/ abs/hep-ex/0207020, Euro. Phys. Jrnl. **C25** (2002) 511-522.
72. **Search for Nucleon Decays Induced by GUT Magnetic Monopoles with the MACRO Experiment**, The MACRO Collaboration, http://arXiv.org/ abs/hep-ex/0207024, Euro. Phys. Jrnl. **C26** (2002) 163-172.
73. **Measurement of the Residual Energy of Muons in the Gran Sasso Underground Laboratories**, The MACRO Collaboration, http://arXiv.org/ abs/hep-ex/0207043, Astropart. Phys. **19** (2003) 313-328.
74. **Neutrino Physics and Astronomy with MACRO**, The MACRO Collaboration, http://arXiv.org/ abs/hep-ex/0209032.
75. **Search for Neutrino Oscillations on a Long Base-Line at the CHOOZ Nuclear Power Station**, The CHOOZ Collaboration, Euro. Phys. Jrnl. **C27** (2003) 331-374.
76. **Muon Energy Estimate Through Multiple Scattering with the MACRO Detector**, The MACRO Collaboration, Nucl. Instrum. Meth., submitted Feb. 2002.
77. **The MACRO Detector at the Gran Sasso**, The MACRO Collaboration, http://arXiv.org/abs/physics/0203018, Nucl. Instrum. Meth. **A486** (2002) 663-707.
78. **Atmospheric Neutrino Oscillations from Upward Through Going Muon Multiple Scattering in the MACRO Experiment**, The MACRO Collaboration, http://arXiv.org/abs/ hep-ex/0304037, Phys. Lett. **B566** (2003) 35-44.
79. **Moon and Sun Shadowing Effect in the MACRO Detector**, The MACRO Collaboration, http://arXiv.org/ abs/hep-ex/9905026, submitted to Astropart. Phys., Feb. 2003.
80. **Search for Diffuse Neutrino Flux from Astrophysical Sources with MACRO**, The MACRO Collaboration, http://arXiv.org/ abs/hep-ex/0203181, Astropart. Phys. **19** (2003) 1-13.

Invited Talks:

81. **Experimental Test of Time Reversal Invariance in Polarized Neutron Decay**, R.I. Steinberg, invited talk, *Int'l. Seminar on Nuclear Physics*, Grenoble, France, March 14, 1973.
82. **Decay Mode Independent Tests of Nucleon Stability**, R.I. Steinberg, invited talk, *Int'l. Conf. on Neutrino Physics and Neutrino Astrophysics*, Baksan Valley, USSR, June 1977.
83. **The Homestake Neutrino Detector as a Cosmic Ray Composition Analyzer**, R.I. Steinberg, invited talk, *Bartol Conf. on Cosmic Rays and Particle Physics*, Newark, DE, October 1978.
84. **Nucleon Stability Experiments with the Homestake Long Range Neutrino Detector**, R.I. Steinberg, invited talk, *Seminar on Proton Stability*, Madison, WI, December 1978.
85. **The Homestake Mine Proton Decay Experiment**, R.I. Steinberg, invited talk, *1st Workshop on Grand Unification*, Durham, NH, April 1980.
86. **Multi-Muons in the Homestake Detector**, R.I. Steinberg, invited talk, *Int'l. Dumand Symp.*, Honolulu, HI, July 1980.

87. **Search for Nucleon Decay: The Deep Underground Water Čerenkov Detector and the Homestake Tracking Spectrometer**, R.I. Steinberg, invited talk, *2nd Workshop on Grand Unification*, Ann Arbor, MI, April 1981.
88. **Nucleon Decay Experiments at the Homestake Gold Mine**, R.I. Steinberg, invited talk, *Int'l. Conf. on Neutrino Physics*, Wailea, HI, July 1981.
89. **The Homestake Tracking Spectrometer, a One-Mile Deep 1400-Ton Liquid Scintillation Nucleon Decay Detector**, R.I. Steinberg, invited talk, *3rd Workshop on Grand Unification*, Chapel Hill, NC, April 1982.
90. **Multiple Muons in the Homestake Underground Detector**, R.I. Steinberg, invited talk, *Workshop on Very High Energy Cosmic Ray Interactions*, Philadelphia, April 1982.
91. **The Homestake Tracking Spectrometer, a One-Mile Deep 1400-Ton Liquid Scintillation Nucleon Decay Detector**, R.I. Steinberg, invited talk, *Workshop on Proton Decay Experiments*, Argonne National Laboratory, June 1982.
92. **Review of Decay-Mode-Insensitive Searches for Nucleon Decay**, R.I. Steinberg, invited talk, *Int'l. Colloquium on Matter Non-Conservation*, Frascati, Italy, January 1983.
93. **Monopole Search and Neutrino Astrophysics with Liquid Scintillation Detectors**, R.I. Steinberg, invited talk, *Monopole '83*, Ann Arbor, MI, October 1983.
94. **Status of the Homestake Detector**, R.I. Steinberg, invited talk, *MACRO Collaboration Meeting*, Frascati, July 1984.
95. **Underground Physics Experiments with Large Liquid Scintillation Detectors**, R.I. Steinberg, invited talk, *1st Int'l. Symp. on Underground Physics*, S. Vincent, Italy, April 1985.
96. **Status of the Large Area MACRO Detector**, R.I. Steinberg, invited talk, *VIth Astrophysics Meeting of the XXIst Rencontre de Moriond*, Les Arcs, France, March 1986.
97. **MACRO, A Large Area Detector for Monopoles and Neutrinos**, R.I. Steinberg, invited talk, *Aspen Winter Physics Conf.*, Aspen, CO, January 1987.
98. **Borex, A New Experiment for the Study of Solar Neutrinos**, R.I. Steinberg, invited talk, *Amer. Chem. Soc. Symp. on Nucl. Astrophysics*, Boston, April 1990.
99. **A Neutrino Oscillation Experiment Using the Perry Reactor and a Large Neutron Capture Scintillation Detector**, R.I. Steinberg, invited talk, *Workshop on Future Experiments at the Fairport Facility*, Boston, June 1991.
100. **The PERRY Experiment**, R.I. Steinberg, invited talk, *IMB Collaboration Meeting*, Irvine, CA, January 1992.
101. **The PERRY Experiment, a Long Baseline Reactor Neutrino Oscillation Search**, R.I. Steinberg, invited talk, *2nd Int'l. Conf. on Gamma Ray and Neutrino Cosmology*, Los Angeles, February 1992.
102. **The PERRY Experiment**, R.I. Steinberg, invited talk, *Franklin Symposium in Celebration of the Discovery of the Neutrino*, Philadelphia, May 1992.
103. **Improved Neutron Detection for MACRO**, R.I. Steinberg, invited talk, *Workshop on Possible Future Enhancements of the MACRO Experiment*, Yarmouthport, MA, May 1992.
104. **Stellar Gravitational Collapse Detection by MACRO: Characteristics and Results**, R.I. Steinberg, invited talk, *IVth Rencontre de Blois, Particle Astrophysics*, Chateau de Blois, France, June 1992.
105. **The PERRY Experiment: A Long Baseline Reactor Neutrino Oscillation Search**, R.I. Steinberg, invited talk, *IVth Rencontre de Blois, Particle Astrophysics*, Chateau de Blois, France, June 1992.

106. **A Long Baseline Reactor Neutrino Oscillation Search**, R.I. Steinberg, invited talk, *Workshop on Future Experiments at the IMB Fairport Underground Laboratory*, University of New Mexico, Albuquerque, NM, September 1992.
107. **PERRY: A New Probe for Neutrino Oscillations**, R.I. Steinberg, invited talk, *First Symposium on Nuclear Physics in the Universe*, Oak Ridge, TN, September 1992.
108. **PERRY: A Reactor Neutrino Oscillation Experiment Sensitive to $\Delta m^2 = 10^{-4}\,eV^2$**, R.I. Steinberg, invited talk, *Meeting of the Division of Particles and Fields of the American Physical Society*, Fermilab, November 1992.
109. **A Gadolinium Loaded Liquid Scintillator for the CHOOZ Experiment**, R.I. Steinberg, invited talk, *CHOOZ Collaboration Meeting*, Annecy, November 1992.
110. **Program to Search for Neutrino Oscillations from 10^{-2} to $10^{-4}\,eV^2$ Using Long Baseline Reactor Neutrino Experiments**, Y. Declais and R.I. Steinberg, invited talk, *Meeting on Underground Physics*, Institut National de Physique Nuclèaire et de Physique des Particules, (IN^2P^3), Paris, December 1992.
111. **CHOOZ and PERRY: New Projects for Long Baseline Reactor Neutrino Oscillations**, R.I. Steinberg, invited talk, *5th Int'l. Workshop on Neutrino Telescopes*, (Venice, March 1993).
112. **Neutrino Science at Nuclear Reactors**, R.I. Steinberg, invited talk, Amer. Assoc. of Physics Teachers Northeast Regional Meeting, Cheltenham, PA, October 15, 1994.
113. **CHOOZ – A High Sensitivity Reactor Neutrino Oscillation Experiment**, R.I. Steinberg, invited talk, *American Physical Society Spring Meeting*, Indianapolis, May 1996.
114. **Status of the CHOOZ Neutrino Oscillation Experiment**, R. Steinberg, Workshop on Fixed Target Physics at the Main Injector, Fermilab, 1-4 May 1997.
115. **Initial Results from the CHOOZ Neutrino Oscillation Experiment**, R. Steinberg, invited talk, *American Physical Society Spring Meeting*, Columbus, May 1998.

Conference Papers:

116. to 382. **available on request**
116. **Quintet-State Collisions in the D(d,p)T Reaction**, R.I. Steinberg, Bull. Am. Phys. Soc. **13**, 99 (1968).
117. **D(d,p)T Reaction with a Polarized Deuteron Beam**, D.C. Bonar, R.I. Steinberg and C.W. Drake, Bull. Am. Phys. Soc. **13**, 99 (1968).
118. **Deuteron Vector and Tensor Analyzing Powers for the D(d,p)T Reaction**, R.I. Steinberg, D.C. Bonar and C.W. Drake, Bull. Am. Phys. Soc. **14**, 22 (1969).
119. **Test of T Invariance in Neutron Beta Decay**, R.I. Steinberg, P. Liaud, B. Vignon and V.W. Hughes, Bull. Am. Phys. Soc. **19**, 514 (1974).
120. **High Spin States in ^{202,204,206}Tl**, N. Frascaria, J.P. Didelez, C.C. Chang, N.S. Chant, R.I. Steinberg and J. Wu, Bull. Am. Phys. Soc. **19**, 1019 (1974).
121. **The (p,2p) Reaction at 100 MeV on ^{7}Li and ^{12}C**, R.I. Steinberg, R. Bhowmik, H.D. Holmgren, C.C. Chang, and J.P. Didelez, Bull. Am. Phys. Soc. **19**, 1021 (1974).
122. **80 MeV(d,^{3}He) Reaction on P-Shell Nuclei**, J.P. Didelez, C.C. Chang, R. Bhowmik, H.D. Holmgren, R.I. Steinberg and J. Wu, Bull. Am. Phys. Soc. **19**, 1022 (1974).
123. **Experimental Test of the Stability of the Electron**, R.I. Steinberg, K. Kwiatkowski, W. Maenhaut and N.S. Wall, Bull. Am. Phys. Soc. **20**, 614 (1975).

124. **Quasifree Scattering in the ^{24}Mg(p,pα)^{20}Ne Reaction at 100 MeV**, R.I. Steinberg, C.C. Chang, N.S. Chant, J.P. Didelez, H.D. Holmgren, P.G. Roos and J. Wu, *Int'l. Conf. on Clustering Phenomena in Nuclei*, College Park, MD, May 1975.

125. **(d,^{3}He) Reactions on ^{6}Li and ^{12}C at E$_d$=80 MeV**, J.P. Didelez, C.C. Chang, H.D. Holmgren, R.I. Steinberg and J. Wu, Bull. Am. Phys. Soc. **20**, 597 (1975).

126. **Experimental Study of Highly Excited States by the (d,^{3}He) Reaction on P-Shell Nuclei**, J.P. Didelez, C.C. Chang, R. Bhowmik, H.D. Holmgren, R.I. Steinberg and J. Wu, *Conf. on Highly Excited States in Nuclei*, Jülich, West Germany, September 1975.

127. **High Spin States Populated by the (d,α) Reaction on ^{204,206,208}Pb at 80 MeV**, J.P. Didelez, C.C. Chang, N.S. Chant, R.I. Steinberg, J. Wu and N. Frascaria, *Conf. on Highly Excited States in Nuclei*, Jülich, West Germany, September 1975.

128. **A Proposed Radiochemical Test of Electric Charge Conservation in Nuclei**, R.I. Steinberg, Bull. Am. Phys. Soc. **21**, 528 (1976).

129. **Study of Parity Violation by Neutron Capture Gamma Rays**, J.F. Cavaignac, P. Liaud, R.I. Steinberg, B. Vignon, E. Jeenicke and R. Wilson, in *Proc. Int'l. Conf. on the Nucleon-Nucleon Interaction*, (Vancouver, BC, 1977) 443.

130. **The Homestake Long Range Neutrino Detector Program**, M. Deakyne, W. Frati, K. Lande, C.K. Lee, R.I. Steinberg, E.J. Fenyves and O. Saavedra, in *Neutrino '77*, (Nauka, Moscow, 1978) **1**, 170.

131. **Decay Mode Independent Tests of Nucleon Stability**, R.I. Steinberg and J.C. Evans, Jr., in *Neutrino '77*, (Nauka, Moscow, 1978) **2**, 321.

132. **Experimental Program of the Homestake Long Range Neutrino Detector**, M. Deakyne, W. Frati, K. Lande, C.K. Lee and R.I. Steinberg, in *Neutrinos – 78*, (Purdue University Press, West Lafayette, IN, 1978) 887.

133. **Search for Neutrinos of Extraterrestrial Origin**, E. Fenyves, W. Frati, K. Lande, C.K. Lee and R.I. Steinberg, *Proc. 15th Int'l. Cosmic Ray Conf.*, Plovdiv, Bulgaria, 1977.

134. **The Homestake Long-Range Neutrino Detector Research Program**, M. Deakyne, W. Frati, K. Lande, C.K. Lee, R.I. Steinberg and E.J. Fenyves, *C.L. Cowan Memorial Symp.*, Washington, DC, May 1978.

135. **The Homestake Neutrino Detector as a Cosmic Ray Composition Analyzer**, M. Deakyne, W. Frati, K. Lande, C.K. Lee and R.I. Steinberg, in *Cosmic Rays and Particle Physics – 1978*, (AIP Conf. Proc. No. 49, American Institute of Physics, New York, 1979) 409.

136. **The Homestake Long-Range Neutrino Detector Research Program**, M. Deakyne, W. Frati, K. Lande, C.K. Lee, R.I. Steinberg and E.J. Fenyves, in *Long-Distance Neutrino Detection* (AIP Conf. Proc. No. 52, American Institute of Physics, New York, 1979) 32.

137. **Status Report on the Proposed Gallium Solar Neutrino Experiment**, The Gallium Solar Neutrino Collaboration, in *Neutrinos, Weak Interactions and Cosmology*, (Bergen, Norway, 1979) 452.

138. **Rate and Angular Distribution of Stopping Cosmic Ray Muons at 1800 mwe**, M. Deakyne, W. Frati, K. Lande, C.K. Lee, R.I. Steinberg, B. Cleveland, R. Davis, Jr.and E.J. Fenyves, *Proc. 16th Int'l. Cosmic Ray Conf.*, Kyoto **13** (1979) 325.

139. **Cosmic Ray Muon Angular and Multiplicity Distributions at 4450 mwe**, M. Deakyne, W. Frati, K. Lande, C.K. Lee, R.I. Steinberg, B. Cleveland, R. Davis, Jr.and E.J. Fenyves, *Proc. 16th Int'l. Cosmic Ray Conf.*, Kyoto **10** (1979) 171.

140. **The Homestake Mine Nucleon Decay Experiment**, M. Deakyne, K. Lande, C.K. Lee, R.I. Steinberg and S. Sutton, in *Proc. XVth Rencontre de Moriond*, (Editions Frontières, Gif-sur-Yvette, France, 1980) 545.
141. **The Homestake Mine Proton Decay Experiment**, R.I. Steinberg, M. Deakyne, K. Lande, C.K. Lee and S. Sutton, First Workshop on Grand Unification, (MathSci Press, Brookline, 1980) 313.
142. **The Homestake Mine Nucleon Decay Search**, M. Deakyne, W. Frati, K. Lande, C.K. Lee and R.I. Steinberg, in *Proc. Int'l. Conf. on High Energy Physics* (Madison, WI, 1980) paper 716.
143. **Nucleon Decay Experiments**, M. Cherry, K. Lande, C.K. Lee and R.I. Steinberg, in *Weak Interactions as Probes of Unification*, (AIP Conf. Proc. No. 72, American Institute of Physics, New York, 1981) 128.
144. **Search for Nucleon Decay: The Deep Underground Water Čerenkov Detector and the Homestake Tracking Spectrometer**, M.Cherry, T. Daily, K. Lande, C.K. Lee, E. Marshall, R.I. Steinberg and B. Cleveland, in *2nd Workshop on Grand Unification*, (Birkhaüser, Boston, 1981) 22.
145. **The Gallium Solar Neutrino Experiment**, The Gallium Solar Neutrino Collaboration, in *Neutrino '81*, (Univ. Hawaii, Honolulu, 1981) **I**, 6.
146. **Nucleon Decay Experiments at the Homestake Gold Mine**, M. Cherry, T. Daily, K. Lande, C.K. Lee, E. Marshall, R.I. Steinberg and B. Cleveland, in *Neutrino '81*, (Univ. Hawaii, Honolulu, 1981) **I**, 232.
147. **Angular Distribution of Cosmic Ray Muons at 4200 mwe**, E.J. Fenyves, M. Cherry, M. Deakyne, K. Lande, C.K. Lee, R.I. Steinberg and J.M. Supplee, *Proc. 17th Int'l. Cosmic Ray Conf.*, Paris **10** (1981) 317.
148. **Multiple Muons in the Homestake Underground Detector**, M. Cherry, M. Deakyne, K. Lande, C.K. Lee, R.I. Steinberg and E.J. Fenyves, *Proc. 17th Int'l. Cosmic Ray Conf.*, Paris **10** (1981) 342.
149. **Neutrino Bursts from Collapsing Stars — Results from the Homestake Burst Search**, M. Cherry, M. Deakyne, T. Daily, K. Lande, C.K. Lee, R.I. Steinberg and E.J. Fenyves, *Proc. 17th Int'l. Cosmic Ray Conf.*, Paris **10** (1981) 364.
150. **Search for Nucleon Decay with a Deep Underground Water Čerenkov Detector**, M. Cherry, M. Deakyne, K. Lande, C.K. Lee, R.I. Steinberg, and B. Cleveland, *Proc. 17th Int'l. Cosmic Ray Conf.*, Paris **11** (1981) 218.
151. **The Homestake Surface-Underground Cosmic Ray Telescope**, M. Cherry, T. Daily, K. Lande, C.K. Lee, E. Marshall, R.I. Steinberg, E.J. Fenyves and T. Ashworth, *Proc. 17th Int'l. Cosmic Ray Conf.*, Paris **11** (1981) 421.
152. **The Homestake Mine Search for Proton Decay**, M. Cherry, I. Davidson, K. Lande, C.K. Lee, E. Marshall and R.I. Steinberg, in *Proc. Int'l. Conf. on Baryon Number Non-Conservation*, (Bombay, 1982).
153. **The Homestake Tracking Spectrometer, a One-Mile Deep 1400-Ton Liquid Scintillation Nucleon Decay Detector**, M. Cherry, I. Davidson, K. Lande, C.K. Lee, E. Marshall, R.I. Steinberg, B. Cleveland, R. Davis, Jr. and D. Lowenstein, 3rd Workshop on Grand Unification, (Birkhaüser, Boston, 1982) 89.
154. **Workshop on Very High Energy Cosmic Ray Interactions**, Philadelphia, April 22–24, 1982, eds. M. Cherry, K. Lande and R.I. Steinberg (Univ. of Pennsylvania, Philadelphia, 1982).

155. **Multiple Muons in the Homestake Underground Detector**, M. Cherry, M. Deakyne, K. Lande, C.K. Lee, R.I. Steinberg, B. Cleveland, R. Davis, Jr.and E.J. Fenyves, in *Proc. Workshop on Very High Energy Cosmic Ray Interactions*, (Univ. of Pennsylvania, Philadelphia, 1982) 278.

156. **The Homestake Cosmic Ray Telescope — A Combined Surface Array and Deep Underground Detector**, M. Cherry, I. Davidson, K. Lande, C.K. Lee, E. Marshall and R.I. Steinberg, in *Proc. Workshop on Very High Energy Cosmic Ray Interactions*, (Univ. of Pennsylvania, Philadelphia, 1982) 356.

157. **Capabilities and Limitations of Different Types of Detectors**, A.L. Grant, J. Bartelt, E.W. Beier, H. Chen, J. Cobb, P. Doe, S. Heagy, P. Litchfield, P. Oddone, D. Perkins, L.E. Price, M. Price, B. Saitta, R.I. Steinberg and L. Sulak, in *Proc. 1982 Summer Workshop on Proton Decay Experiments*, (Argonne National Laboratory, 1982) 17.

158. **The Homestake Tracking Spectrometer, a One-Mile Deep 1400-Ton Liquid Scintillation Nucleon Decay Detector**, M. Cherry, I. Davidson, K. Lande, C.K. Lee, E. Marshall, R.I. Steinberg, B. Cleveland, R. Davis, Jr. and D. Lowenstein, in *Proc. 1982 Summer Workshop on Proton Decay Experiments*, (Argonne National Laboratory, 1982) 150.

159. **Other Physics Experiments at the Homestake Mine**, M. Cherry, I. Davidson, K. Lande, C.K. Lee, E. Marshall, R.I. Steinberg, B. Cleveland, R. Davis, Jr. and D. Lowenstein, in *Proc. 1982 Summer Workshop on Proton Decay Experiments*, (Argonne National Laboratory, 1982) 300.

160. **Beyond Proton Decay: Other Physics Possibilities with the Homestake Nucleon Decay Detectors**, M. Cherry, I. Davidson, K. Lande, C.K. Lee, E. Marshall and R.I. Steinberg, *Workshop on Underground Science*, Los Alamos National Laboratory, September 1982.

161. **The Gallium Solar Neutrino Detector**, The Gallium Solar Neutrino Collaboration, *Workshop on Science Underground*, Los Alamos National Laboratory, September 1982.

162. **Beyond Proton Decay: Other Physics Possibilities with the Homestake Nucleon Decay Detectors**, M. Cherry, I. Davidson, K. Lande, C.K. Lee, E. Marshall, R.I. Steinberg, Science Underground, (AIP Conf. Proc. No. 96, American Institute of Physics, New York, 1983) 248.

163. **The Gallium Solar Neutrino Detector**, The Gallium Solar Neutrino Collaboration, Science Underground, (AIP Conf. Proc. No. 96, American Institute of Physics, New York, 1983) 88.

164. **Review of Decay-Mode-Insensitive Searches for Nucleon Decay**, R.I. Steinberg, ICOMAN '83, (Laboratori Nazionali di Frascati, Italy, 1983) 120.

165. **Physics Opportunities with the Homestake Large Area Scintillation Detector**, M. Cherry, I. Davidson, K. Lande, C.K. Lee, E. Marshall, R.I. Steinberg, B. Cleveland, R. Davis, Jr.and D. Lowenstein, ICOMAN '83, (Laboratori Nazionali di Frascati, Italy, 1983) 133.

166. **The Homestake Cosmic Ray Telescope**, M. Cherry, I. Davidson, K. Lande, C.K. Lee and R.I. Steinberg, in *Proc. Workshop on High Energy Cosmic Ray Interactions*, ed. T.K. Gaisser (Univ. of Utah, Salt Lake City, 1983) 164.

167. **Monopole Search and Neutrino Astrophysics with Liquid Scintillation Detectors**, K. Brown, M.L. Cherry, S. Corbato, I. Davidson, D. Kieda, K. Lande, C.K. Lee and R.I. Steinberg, in *Low Energy Tests of Conservation Laws in Particle Physics*, (AIP Conf. Proceedings No. 114, American Institute of Physics, New York, 1984) 136.

168. **Monopole Search and Neutrino Astrophysics with Liquid Scintillation Detectors**, R.I. Steinberg, K. Brown, M. Cherry, S. Corbato, I. Davidson, D. Kieda, K. Lande and C.K. Lee, Monopole '83, (Plenum, New York, 1984) 567.
169. **Monopoles and the Homestake Underground Scintillation Detector**, M. Cherry, S. Corbato, D. Kieda, K. Lande, C.K. Lee and R.I. Steinberg, Inner Space – Outer Space, (Fermilab, 1984) 430.
170. **The Homestake Large Area Scintillation Detector**, M. Cherry, S. Corbato, D. Kieda, K. Lande, C.K. Lee and R.I. Steinberg, in *Neutrino '84*, (Dortmund, 1984).
171. **The Homestake Large Area Scintillation Detector and Cosmic Ray Telescope**, M. Cherry, S. Corbato, D. Kieda, K. Lande, C.K. Lee and R.I. Steinberg, in *Proc. Workshop on Cosmic Ray and High Energy Gamma Ray Experiments for the Space Station Era*, (Baton Rouge, 1984) 275.
172. **Monopole, Astrophysics and Cosmic Ray Observatory at Gran Sasso**, The MACRO Collaboration, Rice University Meeting of the American Physical Society, March, 1985.
173. **The Homestake Large Area Scintillation Detector and Cosmic Ray Telescope**, M. Cherry, S. Corbato, D. Kieda, K. Lande, C.K. Lee and R.I. Steinberg, Solar Neutrinos and Neutrino Astronomy, (AIP Conf. Proceedings No. 126, American Institute of Physics, New York, 1985) 32.
174. **Multiple Muons in MACRO**, The MACRO Collaboration, *Proc. 19th Int'l. Cosmic Ray Conf.*, La Jolla **8** (1985) 43.
175. **Measurement of Neutrino Oscillations in the MACRO Experiment**, The MACRO Collaboration, *Proc. 19th Int'l. Cosmic Ray Conf.*, La Jolla **8** (1985) 128.
176. **Search for Stellar Collapse with the MACRO Detector at Gran Sasso**, The MACRO Collaboration, *Proc. 19th Int'l. Cosmic Ray Conf.*, La Jolla **8** (1985) 132.
177. **High Energy Neutrino Astronomy with MACRO**, The MACRO Collaboration, *Proc. 19th Int'l. Cosmic Ray Conf.*, La Jolla **8** (1985) 136.
178. **Monopole, Astrophysics and Cosmic Ray Observatory at Gran Sasso**, The MACRO Collaboration, *Proc. 19th Int'l. Cosmic Ray Conf.*, La Jolla **8** (1985) 226.
179. **Monopole Search Below the Parker Limit with the MACRO Detector at Gran Sasso**, The MACRO Collaboration, *Proc. 19th Int'l. Cosmic Ray Conf.*, La Jolla **8** (1985) 230.
180. **MACRO: The Monopole, Astrophysics and Cosmic Ray Observatory**, The MACRO Collaboration, Genesis and Propagation of Cosmic Rays, (1986) 411-426.
181. **The MACRO Experiment at the Gran Sasso Laboratory**, The MACRO Collaboration, in *Proc. Eur. Phys. Soc. Conf.*, (Uppsala, Sweden, 1987).
182. **The MACRO Detector**, The MACRO Collaboration, in *Proc. Workshop on Extra-Solar Neutrino Astronomy*, (Los Angeles, 1987).
183. **The MACRO Large-Area Detector for the Gran Sasso Laboratory**, The MACRO Collaboration, *Telemark IV Neutrino Workshop*, Ashland, WI, March 1987.
184. **MACRO, A Large Area Detector at the Gran Sasso Laboratory**, The MACRO Collaboration, *Workshop on Non-Accelerator Particle Physics*, Rochester, June 1987.
185. **The MACRO Large-Area Detector for the Gran Sasso Laboratory**, The MACRO Collaboration, in *Neutrino Masses and Neutrino Astrophysics*, ed. V. Barger (World Scientific, Singapore, 1987) 463.

186. **Monopole and Gravitational Collapse Trigger Circuits for the MACRO Scintillator Subsystem**, The MACRO Collaboration, *Proc. 20th Int'l. Cosmic Ray Conf.*, Moscow **6** (1987) 334.
187. **The MACRO Detector for the Gran Sasso Laboratory**, The MACRO Collaboration, *Proc. 20th Int'l. Cosmic Ray Conf.*, Moscow **6** (1987) 500.
188. **Design and Performance of the MACRO Liquid Scintillation Detector**, The MACRO Collaboration, *Proc. 20th Int'l. Cosmic Ray Conf.*, Moscow **6** (1987) 504.
189. **The Response of Streamer Tubes to Highly Ionizing Particles**, The MACRO Collaboration, *Proc. 20th Int'l. Cosmic Ray Conf.*, Moscow **6** (1987) 507.
190. **The Streamer Tubes for the MACRO Experiment at the Gran Sasso Laboratory**, The MACRO Collaboration, *Proc. 20th Int'l. Cosmic Ray Conf.*, Moscow **6** (1987) 510.
191. **The Track Etch Detector for the MACRO Experiment**, The MACRO Collaboration, *Proc. 20th Int'l. Cosmic Ray Conf.*, Moscow **6** (1987) 513.
192. **The MACRO Detector for the Gran Sasso Laboratory**, The MACRO Collaboration, *Second Int'l. Symp. on Underground Physics*, Baksan Valley, USSR, August 1987.
193. **The GRANDE Facility for the Study of Astrophysical Sources and High Energy Particle Interactions**, The GRANDE Collaboration, in *Neutrino Telescopes*, ed. M. Baldo Ceolin (Venice, November 1988) 223.
194. **Status Report on the MACRO Experiment at the Gran Sasso Laboratory**, The MACRO Collaboration, in *Neutrino Telescopes*, ed. M. Baldo Ceolin (Venice, November 1988) 139.
195. **The MACRO Detector for the Gran Sasso Laboratory**, The MACRO Collaboration, Underground Physics, (NAUKA, Moscow, 1988) 204.
196. **Search for Stellar Collapse with the MACRO Detector at Gran Sasso**, The MACRO Collaboration, Proc. Vth Marcel Grossman Meeting, (Perth, Australia, 1988) 1513.
197. **GRANDE: An Experiment to Search for Cosmic Gamma Rays and Cosmic Neutrinos**, The GRANDE Collaboration, *Int'l. School of Cosmic Ray Astrophysics*, Erice, Italy, April 1988.
198. **The Track Etch Detector of the MACRO Experiment**, The MACRO Collaboration, *Meeting on Nuclear Track Detectors*, Lahore, Pakistan, 1988.
199. **Neutrino Astronomy with MACRO**, The MACRO Collaboration, in *Particle Astrophysics: Forefront Experimental Issues*, ed. E.B. Norman (World Scientific, Singapore, 1989) 262.
200. **Gamma Ray and Neutrino Detection Experiment (GRANDE)**, The GRANDE Collaboration, in *Neutrino '88*, eds. J. Schneps et al. (World Scientific, Singapore, 1989) 358.
201. **A Novel Approach to Gamma-Ray and Neutrino Astroparticle Physics: The GRANDE Experiment**, The GRANDE Collaboration, *Proc. 14th Texas Symp. on Relativistic Astrophysics*, Ann. N.Y. Acad. of Sci. 571 (1989) 631.
202. **MACRO Collaboration Meeting Proceedings**, ed. R.I. Steinberg (Drexel University, June 1989).
203. **A Large Area Detector for High Energy Gamma Ray and Neutrino Astro-Particle Physics: GRANDE**, The GRANDE Collaboration, Bull. Am. Phys. Soc. **34**, 1239 (1989).

204. **The GRANDE Detector**, The GRANDE Collaboration, *Arkansas Gamma-Ray and Neutrino Workshop*, Little Rock, AR, May 1989.
205. **The MACRO Detector at the Gran Sasso Laboratory**, The MACRO Collaboration, in *5th Force – Neutrino Physics*, eds. O. Fackler and J. Trân Thanh Vân (Editions Frontières, Gif-sur-Yvette, France, 1989) 299.
206. **First Results From MACRO**, The MACRO Collaboration, in *Physics at the 100 GeV Mass Scale*, (Stanford, 1989) 507.
207. **VHE and UHE Gamma Ray Astronomy with GRANDE**, The GRANDE Collaboration, *Proc. 21st Int'l. Cosmic Ray Conf.*, Adelaide **2** (1990) 439.
208. **Study of the Primary Cosmic Rays at $E_0 = 10^{13} - 10^{16}$ eV by Simultaneous Observation of Extensive Air Showers and Underground Muons at the Gran Sasso Laboratory**, The EAS-TOP and MACRO Collaborations, *Proc. 21st Int'l. Cosmic Ray Conf.*, Adelaide **9** (1990) 331.
209. **Simultaneous Observation of Extensive Air Showers and Underground Muons at the Gran Sasso Laboratory**, The EAS-TOP and MACRO Collaborations, *Proc. 21st Int'l. Cosmic Ray Conf.*, Adelaide **9** (1990) 335.
210. **Multiple Muon Physics with the MACRO Detector at Gran Sasso**, The MACRO Collaboration, *Proc. 21st Int'l. Cosmic Ray Conf.*, Adelaide **9** (1990) 356.
211. **Single Muon Physics with the MACRO Detector**, The MACRO Collaboration, *Proc. 21st Int'l. Cosmic Ray Conf.*, Adelaide **9** (1990) 371.
212. **The GRANDE Detector**, The GRANDE Collaboration, *Proc. 21st Int'l. Cosmic Ray Conf.*, Adelaide **10** (1990) 59.
213. **Neutrino Physics with the GRANDE Experiment**, The GRANDE Collaboration, *Proc. 21st Int'l. Cosmic Ray Conf.*, Adelaide **10** (1990) 63.
214. **Will GRANDE See Cosmic Neutrinos? Scaling from UHE Gamma Rays**, The GRANDE Collaboration, *Proc. 21st Int'l. Cosmic Ray Conf.*, Adelaide **10** (1990) 71.
215. **A Search for Magnetic Monopoles with the MACRO Detector at Gran Sasso**, The MACRO Collaboration, *Proc. 21st Int'l. Cosmic Ray Conf.*, Adelaide **10** (1990) 75.
216. **Track-Etch Detector for the MACRO Experiment at Gran Sasso**, The MACRO Collaboration, *Proc. 21st Int'l. Cosmic Ray Conf.*, Adelaide **10** (1990) 252.
217. **Overview of the MACRO Detector at the Gran Sasso Laboratory**, The MACRO Collaboration, *Proc. 21st Int'l. Cosmic Ray Conf.*, Adelaide **10** (1990) 256.
218. **Search for Stellar Collapse with the MACRO Detector at Gran Sasso**, The MACRO Collaboration, *Proc. 21st Int'l. Cosmic Ray Conf.*, Adelaide **10** (1990) 260.
219. **The Study of Cosmic Rays with GRANDE**, The GRANDE Collaboration, *Proc. 21st Int'l. Cosmic Ray Conf.*, Adelaide **10** (1990) 305.
220. **Borex, A Solar Neutrino Experiment**, The Borex Collaboration, in *Proc. 2nd Int'l. Workshop on Neutrino Telescopes*, (Venice, February 1990) 89.
221. **The First Stage of the GRANDE Facility for the Study of Astrophysical Sources and High Energy Particle Interactions**, The GRANDE Collaboration, in *Proc. 2nd Int'l. Workshop on Neutrino Telescopes*, (Venice, February 1990) 139.
222. **MACRO at Gran Sasso: Results and Perspectives**, The MACRO Collaboration, in *Proc. 2nd Int'l. Workshop on Neutrino Telescopes*, (Venice, February 1990) 183.
223. **Combined Measurements of Deep Underground Muons and of the Electromagnetic Components of Extensive Air Showers**, The EAS-TOP Collaboration

and The MACRO Collaboration, in *Proc. 2nd Int'l. Workshop on Neutrino Telescopes*, (Venice, February 1990) 209.

224. **The Borex Solar Neutrino Experiment**, The Borex Collaboration, in *Tests of Fundamental Laws in Physics*, eds. O. Fackler and J. Trân Thanh Vân (Editions Frontières, Gif-sur-Yvette, France, 1990) 401.

225. **The MACRO Experiment at the Gran Sasso Underground Laboratory**, The MACRO Collaboration, in *Tests of Fundamental Laws in Physics*, eds. O. Fackler and J. Trân Thanh Vân (Editions Frontières, Gif-sur-Yvette, France, 1990) 413.

226. **Status Report on the MACRO Experiment at Gran Sasso**, The MACRO Collaboration, Nucl. Phys. **B13** (1990) 368.

227. **Results from the First Run of the First Supermodule of the MACRO Detector at the Gran Sasso Laboratory**, The MACRO Collaboration, in *Theoretical and Phenomenological Aspects of Underground Physics*, eds. A. Bottino and P. Monacelli (Editions Frontières, Gif-sur-Yvette, France, 1990) 49.

228. **First Coincidences from Extensive Air Showers and Underground Muons at the Gran Sasso Laboratory**, The EAS-TOP and MACRO Collaborations, in *Theoretical and Phenomenological Aspects of Underground Physics*, eds. A. Bottino and P. Monacelli (Editions Frontières, Gif-sur-Yvette, France, 1990) 67.

229. **Early Results from the MACRO Experiment at Gran Sasso**, The MACRO Collaboration, Bull. Am. Phys. Soc. **35**, 1034 (1990).

230. **A Search for Periodic Muon Signals from Cyg X-3 Using the MACRO Detector**, The MACRO Collaboration, *Workshop on Gamma Ray Astronomy*, Ann Arbor, November 1990.

231. **MACRO as a GUT Monopole Detector**, The MACRO Collaboration, *Trends in Astroparticle Physics*, Los Angeles, November 1990.

232. **MACRO as Supernova Neutrino Detector**, The MACRO Collaboration, *Supernova Watch Workshop*, Los Angeles, November 1990.

233. **MACRO**, The MACRO Collaboration, *Beyond the Standard Model II*, Norman, OK, Nov. 1990.

234. **The GRANDE Detector**, The GRANDE Collaboration, Nucl. Phys. **B14** (1990) 125.

235. **First Results from the MACRO Experiment at the Gran Sasso Laboratory**, The MACRO Collaboration, Nucl. Phys. **B16** (1990) 486.

236. **Simultaneous Observation of Extensive Air Showers and Underground Muons at the Gran Sasso Laboratory**, The MACRO and EAS-TOP Collaborations, Nucl. Phys. **B16** (1990) 495.

237. **Study of Neutral Currents with MACRO**, The MACRO Collaboration, in *Proc. 2nd Int'l. Conf. on Trends in Astroparticle Physics*, (Aachen, Germany, October 1991).

238. **MACRO at Gran Sasso : Results and Prospects**, The MACRO Collaboration, in *Proc. 2nd Int'l. Conf. on Trends in Astroparticle Physics*, (Aachen, Germany, October 1991).

239. **A New Detector: Borexino**, The Borex Collaboration, in *Proc. 3rd Int'l. Workshop on Neutrino Telescopes*, (Venice, February 1991) 73.

240. **Improvements in the CR39 Polymer for the MACRO Experiment at the Gran Sasso Laboratory**, The MACRO Collaboration, Nucl. Tracks Radiat. Meas. **19** (1991) 641.

241. **Aspects of Experimental Particle Physics from Below: Recent Results and Future Prospects for the MACRO Experiment**, The MACRO Collaboration, in *Proc. 15th Johns Hopkins Workshop on Current Problems in Particle Theory*, (Baltimore, August 1991).

242. **First Results from the MACRO Experiment at Gran Sasso Laboratory**, The MACRO Collaboration, in *Results and Perspectives in Particle Physics*, ed. M. Greco (Editions Frontières, Gif-sur-Yvette, France, 1991) 3.

243. **Results from the First Run of the First Supermodule of the MACRO Detector at the Gran Sasso Laboratory**, The MACRO Collaboration, in *New and Exotic Phenomena*, eds. O. Fackler and J. Trân Thanh Vân (Editions Frontières, Gif-sur-Yvette, France, 1991) 385.

244. **Recent Results from a Magnetic Monopole Search with MACRO**, The MACRO Collaboration, in *New and Exotic Phenomena*, eds. O. Fackler and J. Trân Thanh Vân (Editions Frontières, Gif-sur-Yvette, France, 1991) 455.

245. **Study of the Primary Cosmic Ray Composition with the MACRO Experiment at Gran Sasso**, The MACRO Collaboration, *Proc. 22nd Int'l. Cosmic Ray Conf.*, Dublin **2** (1991) 1.

246. **Study of High Energy Cosmic Rays through the Measurement of the Electromagnetic and TeV Muon Components of Extensive Air Showers by EAS-TOP and MACRO**, The EAS-TOP and MACRO Collaborations, *Proc. 22nd Int'l. Cosmic Ray Conf.*, Dublin **2** (1991) 61.

247. **A Search for Prompt Muons Using the MACRO Detector at Gran Sasso**, The MACRO Collaboration, *Proc. 22nd Int'l. Cosmic Ray Conf.*, Dublin **4** (1991) 169.

248. **Measurement of Electromagnetic and TeV Muon Components of Extensive Air Showers by EAS-TOP and MACRO**, The MACRO and EAS-TOP Collaborations, *Proc. 22nd Int'l. Cosmic Ray Conf.*, Dublin **4** (1991) 563.

249. **Measurement of the Muon Decoherence Function with the MACRO Experiment at Gran Sasso**, The MACRO Collaboration, *Proc. 22nd Int'l. Cosmic Ray Conf.*, Dublin **4** (1991) 567.

250. **Arrival Time Distributions of Very High Energy Cosmic Ray Muons in MACRO**, The MACRO Collaboration, *Proc. 22nd Int'l. Cosmic Ray Conf.*, Dublin **4** (1991) 571.

251. **Search for Astrophysical Point Sources of Muons with the MACRO Detector**, The MACRO Collaboration, *Proc. 22nd Int'l. Cosmic Ray Conf.*, Dublin **4** (1991) 591.

252. **A Search for Sidereal Anisotropies with Underground Muons and an All-Sky Survey for Muon Point Sources with the MACRO Detector**, The MACRO Collaboration, *Proc. 22nd Int'l. Cosmic Ray Conf.*, Dublin **4** (1991) 595.

253. **The GRANDE Experiment**, The GRANDE Collaboration, *Proc. 22nd Int'l. Cosmic Ray Conf.*, Dublin **4** (1991) 690.

254. **Stellar Gravitational Collapse Detection by MACRO: Characteristics and Results**, The MACRO Collaboration, *Proc. 22nd Int'l. Cosmic Ray Conf.*, Dublin **4** (1991) 698.

255. **Search for Nuclearites with the MACRO Detector**, The MACRO Collaboration, *Proc. 22nd Int'l. Cosmic Ray Conf.*, Dublin **4** (1991) 730.

256. **The Borexino Project to Study the Solar Neutrinos**, The Borexino Collaboration, in *Massive Neutrinos and Tests of Fundamental Symmetries*, eds. O. Fackler, G. Fontaine and J. Trân Thanh Vân (Editions Frontières, Gif-sur-Yvette, France, 1992) 37.
257. **First Results from the MACRO Experiment at the Gran Sasso Laboratory**, The MACRO Collaboration, Nucl. Phys. **B19** (1991) 128.
258. **Cosmic Ray Search for Strange Quark Matter with the MACRO Detector**, The MACRO Collaboration, Nucl. Phys. **B24** (1991) 191.
259. **Muon Astronomy with the MACRO Detector at Gran Sasso**, The MACRO Collaboration, Bull. Am. Phys. Soc. **36**, 1382 (1991).
260. **Experimental Particle Astrophysics: A Report on the MACRO experiment**, The MACRO Collaboration, Bull. Am. Phys. Soc. **36**, 1697 (1991).
261. **Recent Results and Future Prospects for the MACRO Experiment**, The MACRO Collaboration, *Int'l. School for Astroparticle Physics*, Woodlands, TX, January 1991.
262. **Multiple Muon Physics in MACRO**, The MACRO Collaboration, *Lepton-Photon and High Energy Physics Conference*, Geneva, July 1991.
263. **Muon Astronomy in MACRO**, The MACRO Collaboration, *Lepton-Photon and High Energy Physics Conference*, Geneva, July 1991.
264. **Search for Strange Quark Matter in MACRO**, The MACRO Collaboration, *Lepton-Photon and High Energy Physics Conference*, Geneva, July 1991.
265. **Preliminary Radon Measurements in the Gran Sasso Underground Laboratory**, B.B. Bam, A. Bassignani, P. Finazzi, G. Giacomelli, L. Lembo, G. Maltoni, L. Patrizii, F. Predieri, C. Sartorio, P. Serra, R. Steinberg and V. Togo, *2nd Workshop on Radon Monitoring*, Trieste, Nov. 1991.
266. **The PERRY Experiment: A Long Baseline Reactor Neutrino Oscillation Search**, R.I. Steinberg, C.E. Lane, M. Mittelbrunn and F.C. Wang, in *Franklin Symposium Proceedings: In Celebration of the Discovery of the Neutrino*, eds. C.E. Lane and R.I. Steinberg (World Scientific, Singapore, 1992) 59.
267. **MACRO and EAS-TOP Cosmic Ray Data**, The MACRO and EAS-TOP Collaborations, in *Results and Perspectives in Particle Physics*, ed. M. Greco (Editions Frontières, Gif-sur-Yvette, France, 1992).
268. **Coincidence of EM and TeV Muon Components of EAS with the EAS-TOP and MACRO Detectors**, The MACRO Collaboration and the EAS-TOP Collaborations, in *The Vancouver Meeting, Particles & Fields '91*, eds. D. Axen, D. Bryman and M. Comyn (World Scientific, Singapore, 1992) 903.
269. **MACRO Multi-Muon Event Analysis**, The MACRO Collaboration, in *The Vancouver Meeting, Particles & Fields '91*, eds. D. Axen, D. Bryman and M. Comyn (World Scientific, Singapore, 1992) 906.
270. **Muon Astronomy Results from MACRO**, The MACRO Collaboration, in *The Vancouver Meeting, Particles & Fields '91*, eds. D. Axen, D. Bryman and M. Comyn (World Scientific, Singapore, 1992) 1014.
271. **Search for Nuclearites with the MACRO Detector**, The MACRO Collaboration, in *The Vancouver Meeting, Particles & Fields '91*, eds. D. Axen, D. Bryman and M. Comyn (World Scientific, Singapore, 1992) 1017.
272. **Muon Astronomy with MACRO**, The MACRO Collaboration, *Workshop for High Energy Neutrino Astrophysics*, Honolulu, March 1992.

273. **Neutrino Astronomy with MACRO**, The MACRO Collaboration, *Workshop for High Energy Neutrino Astrophysics*, Honolulu, March 1992.
274. **Transparencies from the Franklin Symposium in Celebration of the Discovery of the Neutrino**, Philadelphia, April 1992, eds. C.E. Lane and R.I. Steinberg (Drexel University, May 1992).
275. **Stellar Gravitational Collapse Detection by MACRO: Characteristics and Results**, The MACRO Collaboration, *Neutrino '92*, Grenada, June 1992.
276. **Muon Measurements with MACRO**, The MACRO Collaboration, *Proc. Int'l. Symp. on Very High Energy Cosmic Ray Interactions*, Ann Arbor, June 1992.
277. **Status and Prospects of the MACRO Experiment**, The MACRO Collaboration, *Summer Institute on Low Energy Neutrinos in Physics and Astrophysics*, l'Aquila, Italy, July 1992.
278. **Multiple Muons with MACRO**, The MACRO Collaboration, *European Conf. on Cosmic Ray Physics*, Geneva, July 1992.
279. **Effect of the Geomagnetic Field on the Separation of Underground Muons**, The MACRO Collaboration, *European Conf. on Cosmic Ray Physics*, Geneva, July 1992.
280. **Muon Astronomy with MACRO**, The MACRO Collaboration, *European Conf. on Cosmic Ray Physics*, Geneva, July 1992.
281. **Search for Stellar Gravitational Collapse by MACRO: Characteristics and Results**, The MACRO Collaboration, Nucl. Phys. **B28A** (1992) 61-64.
282. **Search for Strange Quark Matter Using the MACRO Detector**, The MACRO Collaboration, Nucl. Phys. **B28A** (1992) 306-309.
283. **Muon Astronomy with the MACRO Detector at Gran Sasso**, The MACRO Collaboration, Nucl. Phys. **B28A** (1992) 385-388.
284. **Multiple Muons and Primary Cosmic Ray Composition Studies with MACRO**, The MACRO Collaboration, Nucl. Phys. **B28A** (1992) 389-392.
285. **Measurement of Electromagnetic and TeV Muon Components of Extensive Air Showers by EAS-TOP and MACRO Experiments**, The MACRO and EAS-TOP Collaborations, Nucl. Phys. **B28A** (1992) 393-396.
286. **Borexino - A Real Time Detector for Low Energy Solar Neutrinos**, The Borexino Collaboration, Nucl. Phys. **B28A** (1992) 486-490.
287. **A MACRO Sampler**, The MACRO Collaboration, *Proc. Int'l. Conf. on High Energy Physics*, Dallas, August 1992.
288. **Muon and Neutrino Astronomy (MACRO)**, The MACRO Collaboration, *Proc. Int'l. Conf. on High Energy Physics*, Dallas, August 1992.
289. **Strange Quark Matter Search Using the MACRO Detector**, The MACRO Collaboration, *Proc. Int'l. Conf. on High Energy Physics*, Dallas, August 1992.
290. **Borexino: A Real Time Detector for Low Energy Solar Neutrinos**, The Borexino Collaboration, *Proc. Int'l. Conf. on High Energy Physics*, Dallas, August 1992.
291. **Multiple Muon Events in MACRO and Chemical Composition of the Primary Cosmic Rays**, The MACRO Collaboration, in *Vulcano 1992, Proceedings*, Frontier Objects in Astrophysics and Particle Physics, 447-456.
292. **The Borexino Solar Neutrino Experiment**, The Borexino Collaboration, in *Proc. XXVIIth Rencontre de Moriond, Les Arcs, France, January 1992*, eds. O. Fackler, G. Fontaine and J. Trân Thanh Vân (Editions Frontières, Gif-sur-Yvette, France, 1993).

293. **PERRY: A Long Baseline Reactor Neutrino Oscillation Experiment**, R.I. Steinberg, C.E. Lane, M. Mittelbrunn and F.C. Wang, in *Gamma Ray-Neutrino Cosmology and Planck Scale Physics*, ed. D. Cline (World Scientific, Singapore, 1993) 188.
294. **MACRO as a Supernova Detector: Features and Results**, The MACRO Collaboration, *Frontiers of Neutrino Astrophysics*, eds. Y. Suzuki and K. Nakamura, (Universal Academy Press, Tokyo, 1993), 269.
295. **Recent Results from MACRO**, The MACRO Collaboration, *DAΦNE and Other Topics in Particle Physics*, Frascati, Italy, November 1992.
296. **High Energy Neutrinos in MACRO**, The MACRO Collaboration, *5th Int'l. Workshop on Neutrino Telescopes*, (Venice, March 1993).
297. **CHOOZ and PERRY: New Projects for Long Baseline Reactor Neutrino Oscillations**, R.I. Steinberg, *5th Int'l. Workshop on Neutrino Telescopes*, (Venice, March 1993).
298. **A Sensitive Search for Neutrino Bursts from Stellar Gravitational Collapse with the MACRO Detector**, The MACRO Collaboration, *Proc. 23rd Int'l. Cosmic Ray Conf.*, Calgary, 1993.
299. **Search for Slow Moving Magnetic Monopoles with the MACRO Detector**, The MACRO Collaboration, *Proc. 23rd Int'l. Cosmic Ray Conf.*, Calgary, 1993.
300. **The Muon Vertical Intensity Measured with the MACRO Detector**, The MACRO Collaboration, *Proc. 23rd Int'l. Cosmic Ray Conf.*, Calgary, 1993.
301. **Muon Astronomy and Search for Sidereal Anisotropies**, The MACRO Collaboration, *Proc. 23rd Int'l. Cosmic Ray Conf.*, Calgary, 1993.
302. **The Measurement of the Muon Pair Separation Distribution with the MACRO Detector**, The MACRO Collaboration, *Proc. 23rd Int'l. Cosmic Ray Conf.*, Calgary, 1993.
303. **Composition of the Ultra-High Energy Primary Cosmic Rays as Measured by the MACRO Detector**, The MACRO Collaboration, *Proc. 23rd Int'l. Cosmic Ray Conf.*, Calgary, 1993.
304. **Constraints on the PeV Cosmic Ray Composition and Interaction Models from Coincident EAS-TOP and MACRO Data**, The EAS-TOP and MACRO Collaborations, *Proc. 23rd Int'l. Cosmic Ray Conf.*, Calgary, 1993.
305. **Coincident Observations of Air Cerenkov Light by a Surface Array with Deep Underground Muon Bundles**, The GRACE and MACRO Collaborations, *Proc. 23rd Int'l. Cosmic Ray Conf.*, Calgary, 1993.
306. **The MACRO Experiment at Gran Sasso**, The MACRO Collaboration, *1993 Baksan School of Physics*, Baksan, Russia, October 1993.
307. **PERRY: A Reactor Neutrino Oscillation Experiment Sensitive to $\Delta m^2 = 10^{-4}\,eV^2$**, R.I. Steinberg, C.E. Lane, M. Mittelbrunn and F.C. Wang, in *Particle Astrophysics*, eds. G. Fontaine and J. Trân Thanh Vân (Editions Frontières, Gif-sur-Yvette, France, 1993) 499.
308. **PERRY: A Reactor Neutrino Oscillation Experiment Sensitive to $\Delta m^2 = 10^{-4}\,eV^2$**. R.I. Steinberg, C. Lane, M. Mittelbrunn and F.C. Wang, in *The FERMILAB Meeting DPF92*, ed. C.H. Albright, (World Scientific, Singapore, 1993) 1296.
309. **Search for Slow Ionizing Penetrating Particles with the MACRO Detector**, The MACRO Collaboration, in *The FERMILAB Meeting DPF92*, ed. C.H. Albright, (World Scientific, Singapore, 1993) 1376.

310. **Widely Separated Muons in the MACRO Experiment at Gran Sasso**, The MACRO Collaboration, in *The FERMILAB Meeting DPF92*, ed. C.H. Albright, (World Scientific, Singapore, 1993) 1379.
311. **Search for Stellar Collapse with the MACRO Detector**, The MACRO Collaboration, in *The FERMILAB Meeting DPF92*, ed. C.H. Albright, (World Scientific, Singapore, 1993) 1453.
312. **High Energy Neutrino Physics with MACRO**, The MACRO Collaboration, *Strategies for Dark Matter Detection*, Berkeley, CA, February 1994.
313. **Detection of High Energy Neutrinos with MACRO**, The MACRO Collaboration, in *Proc. 6th Int'l. Workshop on Neutrino Telescopes*, (Venice, February 1994).
314. **Neutrino Produced Upward-Going Muons in the MACRO Experiment**, The MACRO Collaboration, in *Proc. Vulcano Workshop*, Vulcano, Italy, May 1994.
315. **Upward-Going Muon Physics with the MACRO Detector**, The MACRO Collaboration, *5th Conf. on Intersections of Nuclear and Particle Physics*, St. Petersburg, FL, June 1994.
316. **Upward-Going Muons in MACRO**, The MACRO Collaboration, *Proc. Int'l. Conf. on High Energy Physics*, Glasgow, 1994.
317. **Multiple Muon Measurements with MACRO**, The MACRO Collaboration, *8th Intl. Symp. on Very High Energy Cosmic Ray Interactions*, Tokyo, July 1994, 711-722, http://arXiv.org/ abs/hep-ex/9410001.
318. **A Search for Cosmic Point Sources of Muons and for Seasonal Variations in the Underground Muon Flux with the MACRO Detector**, The MACRO Collaboration, *8th Intl. Symp. on Very High Energy Cosmic Ray Interactions*, Tokyo, July 1994.
319. **Underground Muon Physics at MACRO**, The MACRO Collaboration, *APS Div. Part. and Fields*, Albuquerque, Aug. 1994.
320. **Recent Results from MACRO at Gran Sasso**, The MACRO Collaboration, *Intl. Symp. on Cosmic Ray Physics*, Lhasa, Tibet, Aug. 1994.
321. **Multiple Muon Physics at MACRO**, The MACRO Collaboration, *Intl. Symp. on Cosmic Ray Physics*, Lhasa, Tibet, Aug. 1994.
322. **Interpretation of EAS Data at $E_0 \sim 1000$ TeV in Terms of the Extrapolation of Direct Cosmic Ray Measurements**, The EAS-TOP and MACRO Collaborations, Nucl. Phys. **B35** (1994).
323. **Muon Astrophysics with the MACRO Detector**, The MACRO Collaboration, Nucl. Phys. **B35** (1994) 229-234.
324. **Upward-Going Muons in the MACRO Experiment**, The MACRO Collaboration, Nucl. Phys. **B35** (1994) 235-239.
325. **Study of the Cosmic Ray Primary Composition at $E_0 \sim 1000$ TeV by EAS-TOP and MACRO at Gran Sasso**, The EAS-TOP and MACRO Collaborations, Nucl. Phys. **B35** (1994) 257-258.
326. **Search for Slowly Moving Magnetic Monopoles**, The MACRO Collaboration, Nucl. Phys. **B35** (1994) 261-263.
327. **Neutrino Induced Upward-Going Muons with the MACRO Detector**, The MACRO Collaboration, in *Neutrino '96, Helsinki, Finland, June, 1996*, (World Scientific, Singapore, 1997) 529-533.

328. **The Reactor Neutrino Oscillation Experiment "CHOOZ"**, The CHOOZ Collaboration, in *Neutrino '96, Helsinki, Finland, June, 1996*, (World Scientific, Singapore, 1997) 242-247.
329. **Neutrino Results Using Upward Going Muons in MACRO**, The MACRO Collaboration, MACRO-PUB-96-4, Jul 1996, 17 pp.
330. **Performance of the MACRO Detector at Gran Sasso: Moon Shadow and Seasonal Variations**, The MACRO Collaboration, Nucl. Phys. **B61** (1998) 180-184.
331. **Performance of the Transition Radiation Detector of the MACRO Experiment**, The MACRO Collaboration, Nucl. Phys. **B61** (1998) 289-294.
332. **Search for Neutrino Bursts from Stellar Gravitational Collapses with MACRO**, The MACRO Collaboration, Hyperons, Charm & Beauty (1996) 255-262.
333. **Magnetic Monopole Search with the MACRO Detector at Gran Sasso**, The MACRO Collaboration, *Proc. 25th Int'l. Cosmic Ray Conf.*, Durban, 1997.
334. **Search for Nuclearites with the MACRO Detector at Gran Sasso**, The MACRO Collaboration, *Proc. 25th Int'l. Cosmic Ray Conf.*, Durban, 1997.
335. **The Measurement of the Atmospheric Neutrino Flux Using MACRO**, The MACRO Collaboration, *Proc. 25th Int'l. Cosmic Ray Conf.*, Durban, 1997.
336. **Neutrino Astronomy with the MACRO Detector**, The MACRO Collaboration, *Proc. 25th Int'l. Cosmic Ray Conf.*, Durban, 1997.
337. **Indirect Search for Wimps with the MACRO Detector**, The MACRO Collaboration, *Proc. 25th Int'l. Cosmic Ray Conf.*, Durban, 1997.
338. **Observation of Upgoing Charged Particles in MACRO Produced by High Energy Interactions of Muons**, The MACRO Collaboration, *Proc. 25th Int'l. Cosmic Ray Conf.*, Durban, 1997.
339. **An Improved Analysis of the Underground Muon Decoherence Observed in MACRO**, The MACRO Collaboration, *Proc. 25th Int'l. Cosmic Ray Conf.*, Durban, 1997.
340. **Measurement of Underground Muon Energies Using a TRD in MACRO**, The MACRO Collaboration, *Proc. 25th Int'l. Cosmic Ray Conf.*, Durban, 1997.
341. **A Sky Survey Using Muons in the MACRO Detector**, The MACRO Collaboration, *Proc. 25th Int'l. Cosmic Ray Conf.*, Durban, 1997.
342. **The Search for a Sidereal Anisotropy in the Underground Muon Intensity as Seen by MACRO**, The MACRO Collaboration, *Proc. 25th Int'l. Cosmic Ray Conf.*, Durban, 1997.
343. **Study of the Primary Cosmic Ray Composition in the Knee Region with EAS-TOP and MACRO**, The EAS-TOP and MACRO Collaborations, *Proc. 25th Int'l. Cosmic Ray Conf.*, Durban, 1997.
344. **Neutrino-Astronomy with the MACRO Experiment at Gran Sasso**, The MACRO Collaboration, *High Energy Phenomena in Astrophysics*, Moriond, FRANCE, January 18-25, 1997.
345. **Multiple Muon Physics with the MACRO Detector at Gran Sasso**, The MACRO Collaboration, *High Energy Phenomena in Astrophysics*, Moriond, FRANCE, January 18-25, 1997.
346. **Muon Astronomy with the MACRO Detector at Gran Sasso**, The MACRO Collaboration, *West Mediterranean Workshop*, Rabat, MOROCCO, March 19-26, 1997,

347. **Results from the MACRO Experiment**, The MACRO Collaboration, *Baksan 1997 School*, Baksan, RUSSIA, April 14-22, 1997.
348. **Search for Magnetic Monopoles and for Nuclearites with the MACRO Detector at Gran Sasso**, The MACRO Collaboration, *5th Topical Seminar on "The Irresistible Rise of the Standard Model"*, San Miniato, ITALY, April 21-25, 1997.
349. **MACRO TRD Upgradings and Measurement of the Underground Muon Energy**, The MACRO Collaboration, *Frontier Detectors for Frontier Physics*, 7th Pisa Meeting on Advanced Detectors, La Biodola, Isola d'Elba, May 25-31, 1997.
350. **Magnetic Monopole Search with the MACRO Detector at Gran Sasso**, The MACRO Collaboration, *Beyond the Desert*, Castle Ringberg, June 8-14, 1997.
351. **Upgoing Muons with MACRO Detector**, The MACRO Collaboration, *Weak interactions and Neutrinos*, Capri, ITALY June 22-28, 1997.
352. **Neutrino Astrophysics with the MACRO Detector in the Gran Sasso Underground Laboratory**, The MACRO Collaboration, Nucl. Phys. **B66** (1998) 231-234.
353. **Measurement of the Atmospheric Muon Neutrino Flux with the MACRO Detector**, The MACRO Collaboration, Nucl. Phys. **B66** (1998) 374-377.
354. **Status of the Chooz Experiment**, The CHOOZ Collaboration, Nucl. Phys. **B66** (1998) 391-395.
355. **Atmospheric Neutrino Induced Muons in the MACRO Detector**, The MACRO Collaboration, http://arXiv.org/abs/hep-ex/9810008, Nucl.Phys.Proc.Suppl. **77** (1999) 117-122.
356. **Study of Photonuclear Interaction of Muons in Rock with the MACRO Experiment**, The MACRO Collaboration, http://arXiv.org/ abs/hep-ex/9809006, *Vulcano Workshop on Frontier Objects in Astrophysics and Particle Physics*, Vulcano, Italy, May 1998.
357. **Measurement of the Atmospheric Neutrino Induced Muon Flux with the MACRO Detector**, The MACRO Collaboration, http://arXiv.org/ abs/hep-ex/9809003, *Vulcano Workshop on Frontier Objects in Astrophysics and Particle Physics*, Vulcano, Italy, May 1998.
358. **Measurement of Atmospheric Neutrinos with MACRO**, The MACRO Collaboration, *Proc. Int'l. Conf. on High Energy Physics*, Vancouver, 1998.
359. **Atmospheric and Astrophysics Neutrinos with MACRO**, The MACRO Collaboration, http://arXiv.org/ abs/hep-ex/9810017, in *DARK98 Conf. Proc.*, Heidelberg, July 1998.
360. **Low Energy Atmospheric Muon Neutrinos in MACRO**, The MACRO Collaboration, http://arXiv.org/ abs/hep-ex/9808001, in *16th Eur. Cosmic Ray Symp.*, Madrid, July 1998.
361. **Atmospheric Neutrino Oscillation Results with MACRO**, The MACRO Collaboration, in *Proc. 8th Int'l. Workshop on Neutrino Telescopes*, (Venice, February 1999) 217.
362. **Neutrino Oscillations at High Energy by MACRO**, The MACRO Collaboration, http://arXiv.org/ abs/hep-ex/9905025, *Proc. 26th Int'l. Cosmic Ray Conf.*, Salt Lake City, 1999.
363. **Low Energy Atmospheric Neutrino Events in MACRO**, The MACRO Collaboration, http://arXiv.org/ abs/hep-ex/9905028, *Proc. 26th Int'l. Cosmic Ray Conf.*, Salt Lake City, 1999.
364. **Search for WIMPS Using Upward-Going Muons in MACRO**, The MACRO Collaboration, http://arXiv.org/ abs/hep-ex/9905021, *Proc. 26th Int'l. Cosmic Ray Conf.*, Salt Lake City, 1999.

365. **Transition Radiation Detector in MACRO**, The MACRO Collaboration, http://arXiv.org/ abs/hep-ex/9905018, *Proc. 26th Int'l. Cosmic Ray Conf.*, Salt Lake City, 1999.

366. **Search for Magnetic Monopoles with MACRO**, The MACRO Collaboration, http://arXiv.org/ abs/hep-ex/9905023, *Proc. 26th Int'l. Cosmic Ray Conf.*, Salt Lake City, 1999.

367. **MACRO as a Telescope for Neutrino Astronomy**, The MACRO Collaboration, http://arXiv.org/ abs/hep-ex/9905020, *Proc. 26th Int'l. Cosmic Ray Conf.*, Salt Lake City, 1999.

368. **Moon and Sun Shadowing Observed by the MACRO Detector**, The MACRO Collaboration, http://arXiv.org/ abs/hep-ex/9905026, *Proc. 26th Int'l. Cosmic Ray Conf.*, Salt Lake City, 1999.

369. **Measurement of the Atmospheric Muon Neutrinos with the MACRO Detector**, The MACRO Collaboration, http://arXiv.org/ abs/hep-ex/9906019, *Les Rencontres de Physique de la Vallee d'Aoste*, La Thuile, Italy, March 1999.

370. **High Energy Astrophysical Neutrinos at MACRO**, The MACRO Collaboration, Weak Interactions and Neutrinos, Cape Town, 1999.

371. **Updated Results from Chooz**, The CHOOZ Collaboration, The Identification of Dark Matter, Feb. 1999, 578-583, Buxton, England, 1998.

372. **Neutrino Physics and Astrophysics with the MACRO Detector**, The MACRO Collaboration, http://arXiv.org/ abs/hep-ex/0010055, *Chacaltaya Meeting on Cosmic Ray Physics*, La Paz, Bolivia, July 2000.

373. **Search for GUT Monopoles and Massive Exotic Particles with MACRO**, The MACRO Collaboration, *Frontiers in Particle Astrophysics and Cosmology*, San Feliu de Guixols, Spain, 2000. Nucl. Phys. Proc. Suppl. **95** (2001) 82-85.

374. **Atmospheric Neutrino Oscillations in MACRO**, The MACRO Collaboration, http://arXiv.org/ abs/hep-ex/0110021, *Int'l Workshop on Neutrino Oscillations*, Venice, July 2001.

375. **Estimate of the Energy of Upgoing Muons with Multiple Coulomb Scattering**, The MACRO Collaboration, http://arXiv.org/ abs/hep-ex/0105087, *NATO Advanced Research Workshop on Cosmic Radiation*, Oujda, Morocco, March 2001.

376. **MACRO and the Atmospheric Neutrino Problem**, The MACRO Collaboration, http://arXiv.org/ abs/hep-ex/0101019, *3rd Intl. Workshop on New Worlds in Astroparticle Physics*, 1-3 September 2000, Faro, Portugal.

377. **Status Report of the MACRO Experiment for the year 2001**, The MACRO Collaboration, http://arXiv.org/ abs/hep-ex/0206027.

378. **Neutrino Physics and Astrophysics with the MACRO Experiment at the Gran Sasso Lab**, The MACRO Collaboration, Brasilian Physical Society, S. Pedro, Brasil, 1-4 September 2002. http://arXiv.org/ abs/hep-ex/0210006.

379. **Atmospheric neutrino oscillations with the MACRO detector**, The MACRO Collaboration, Conf. on Physics beyond the Standard Model, Oulu, Finland, 2-7 June 2002, http://arXiv.org/ abs/hep-ex/0210008.

380. **Search for GUT Magnetic Monopoles with the MACRO Experiment at the Gran Sasso Lab**, The MACRO Collaboration, ICHEP 2002 Conference, Amsterdam, 24-31 July 2002, http://arXiv.org/ abs/hep-ex/0210021.

381. **Measurement of the Ratio Double/Single Muon Events as a Function of Rock Depth with MACRO**, The MACRO Collaboration, http://arXiv.org/ abs/hep-ex/0201017.
382. **Use of Coulomb Scattering for Determining Neutrino Energies with MACRO**, The MACRO Collaboration, 27th Intl. Cosmic Ray Conf., Hamburg, Germany 07-15 Aug 2001, http://arXiv.org/ abs/hep-ex/0201016.

Research Proposals:

383. **Proposal for a Large Area Detector Dedicated to Monopole Search, Astrophysics and Cosmic Ray Physics at the Gran Sasso Laboratory** The MACRO Collaboration, (Boston University, Caltech, Drexel University, Indiana University, Texas A&M University, University of Michigan, and eight Italian universities and laboratories) November 1984.
384. **Proposal to the United States Department of Energy Office of High Energy Physics for Support of High Energy Physics Research Underground**, R.I. Steinberg, January 1985.
385. **Updated Proposal to the Office of High Energy Physics for Support of High Energy Physics Research Underground**, R.I. Steinberg, June 1985.
386. **Proposal for a Gallium Solar Neutrino Experiment**, Brookhaven National Laboratory, California Institute of Technology, Drexel University, Institute for Advanced Study, Los Alamos National Laboratory, National Research Council of Canada, Princeton University, Queen's University, University of Chicago, University of Washington. September 1985.
387. **Request for FY'86 Supplemental Funding for Department of Energy Contract DE-AC02-86ER-40257, High Energy Physics Research Underground**, R.I. Steinberg, May 1986.
388. **Proposal for Renewal of Department of Energy Contract DE-AC02-86ER-40257, Non- Accelerator Particle Physics**, R.I. Steinberg, September 1986.
389. **Supplemental Proposal to the U. S. Department of Energy for Contract DE-AC02-86ER-40257, Non-Accelerator Particle Physics**, R.I. Steinberg, August 1987.
390. **Proposal for Renewal of U. S. Department of Energy Contract DE-AC02-86ER-40257, Non-Accelerator Particle Physics**, R.I. Steinberg, October 1987.
391. **Proposal for Development of a Boron Scintillation Detector for the Study of Solar Neutrinos**, R.I. Steinberg and R.S. Raghavan, Drexel University, June 1988.
392. **Proposal to Construct the GRANDE Facility for the Study of Astrophysical Sources and High-Energy Particle Interactions**, The GRANDE Collaboration, (Drexel University, Louisiana State University, Purdue University, University of Arkansas, Little Rock, University of California, Irvine, University of Maryland, University of Washington), August 1988.
393. **Proposal for Renewal of U. S. Department of Energy Contract DE-AC02-86ER-40257, Non-Accelerator Particle Physics**, R.I. Steinberg and C.E. Lane, October 1988.
394. **Proposal for Renewal of U. S. Department of Energy Contract DE-AC02-86ER-40257, Non-Accelerator Particle Physics**, October 1989.

395. **Proposal to Construct the First Stage of the GRANDE Facility for the Study of Astrophysical Sources and High-Energy Particle Interactions**, The GRANDE Collaboration, (Drexel University, Louisiana State University, Purdue University, University of Arkansas, Little Rock, University of California, Irvine, University of Maryland, University of Washington), March 1990.
396. **Proposal for Renewal of U. S. Department of Energy Contract DE-AC02-86ER-40257, Experimental Particle Physics**, R.I. Steinberg and C.E. Lane, August 1990.
397. **Borexino at Gran Sasso, Proposal for a Real Time Detector for Low Energy Solar Neutrinos**, The Borexino Collaboration, (AT&T Bell Laboratories, Drexel University, Gran Sasso Laboratory, Milan University, MIT, Pavia University, Princeton University, Technische Höchschule München, University of Hawaii), August 1991.
398. **Proposal for Renewal of U. S. Department of Energy Grant DE-FG02-91ER40615, Experimental Particle Physics**, R.I. Steinberg and C.E. Lane, August 1991.
399. **Proposal for Renewal of U. S. Department of Energy Grant DE-FG02-91ER40615, Experimental Particle Physics**, R.I. Steinberg and C.E. Lane, September 1992.
400. **Borexino – A Real Time Detector for Low Energy Solar Neutrinos**, U.S. Borexino Collaboration – AT&T Bell Laboratories, Drexel University, MIT, Princeton University, University of California (Berkeley), University of Hawaii, December 1992.
401. **CHOOZ Neutrino Oscillation Experiment**, Collège de France, Drexel University, Kurchatov Institute (Moscow), Universitè d'Annecy (France), University of California (Irvine), University of New Mexico, May 1993.
402. **Proposal for Renewal of U. S. Department of Energy Grant DE-FG02-91ER40615, Experimental Particle Physics**, R.I. Steinberg and C.E. Lane, September 1993.
403. **Proposal for Renewal of U. S. Department of Energy Grant DE-FG02-91ER40615, Experimental Particle Physics**, R.I. Steinberg and C.E. Lane, August 1994.
404. **Proposal for Renewal of U. S. Department of Energy Grant DE-FG02-91ER40615, Experimental Particle Physics**, R.I. Steinberg and C.E. Lane, August 1995.
405. **Proposal for Renewal of U. S. Department of Energy Grant DE-FG02-91ER40615, Experimental Particle Physics**, R.I. Steinberg and C.E. Lane, October 1996.
406. **Proposal for Renewal of U. S. Department of Energy Grant DE-FG02-91ER40615, Experimental Particle Physics**, R.I. Steinberg and C.E. Lane, October 1997.
407. **Proposal for Renewal of U. S. Department of Energy Grant DE-FG02-91ER40615, Experimental Particle Physics**, R.I. Steinberg and C.E. Lane, August 1998.
408. **Proposal for Renewal of U. S. Department of Energy Grant DE-FG02-91ER40615, Experimental Particle Physics**, R.I. Steinberg and C.E. Lane, August 1999.

Technical Reports:

409. **MACRO Scintillator Oil and Delivery System**, G. Tarlé, R. Heinz and R.I. Steinberg, MACRO Note 1006/85, June 1985.
410. **Non-Accelerator Particle Physics, Progress Report for the Period February 1, 1986 - January 31, 1987**, R.I. Steinberg, DOE/ER/40257-001, January 1987.
411. **Status Report on the Drexel Long Path Spectrophotometer**, N.Ide and R.I. Steinberg, MACRO Note 1000/87, January 1987.
412. **Non-Accelerator Particle Physics, Progress Report for the Period February 1, 1987 - January 31, 1988**, R.I. Steinberg, DOE/ER/40257-003, January 1988.
413. **Status Report on MACRO Liquid Scintillator Optimization**, C. Lane, J. Panetta and R. I. Steinberg, MACRO Note 1006/88, September, 1988.
414. **Design Concepts for Borex**, R.S. Raghavan, J.W. Mitchell, E.A. Chandross, B.G. Cortez, R.I. Steinberg and C.E. Lane, AT&T Report (ATT-BX-88-01), 1988.
415. **Non-Accelerator Particle Physics, Progress Report for the Period February 1, 1988 - January 31, 1989**, R.I. Steinberg, DOE/ER/40257-004, November 1988.
416. **Non-Accelerator Particle Physics, Progress Report for the Period February 1, 1989 - January 31, 1990**, R.I. Steinberg and C.E. Lane, DOE/ER/40257-005, January 1990.
417. **Non-Accelerator Particle Physics, Final Report for the Period February 1, 1986 - April 30, 1991**, R.I. Steinberg and C.E. Lane, DOE/ER/40257-006, August 1991.
418. **Non-Accelerator Particle Physics, Progress Report for the Period February 15, 1991 - September 15, 1991**, R.I. Steinberg and C.E. Lane, DOE/ER/40615-001, September 1991.
419. **Experimental Particle Physics, Progress Report for the Period Sept. 16, 1991 - Sept. 30, 1992**, R.I. Steinberg and C.E. Lane, DOE/ER/40615-002, September 1992.
420. **Experimental Particle Physics, Progress Report for the Period October 1, 1992 - Sept. 30, 1993**, R.I. Steinberg and C.E. Lane, DOE/ER/40615-003, October 1993.

Seminars and Colloquia:

421. **Nuclear Physics with Polarized Deuterons**, Yale University, New Haven, CT, May 10, 1966.
422. **Parity Conservation in Strong Interactions**, Yale University, New Haven, CT, February 7, 1968.
423. **The D(d,p)T Reaction with Polarized Deuterons**, Lawrence Radiation Laboratory, Livermore, CA, June 11, 1968.
424. **Study of the D(d,p)T Reaction Using Polarized 190 KeV Deuterons**, Yale University, New Haven, CT, February 16, 1969.
425. **Decay of Polarized Neutrons**, Yale University, New Haven, CT, February 10, 1971.
426. **Polarized Neutron Decay and Time Reversal Invariance**, Institut Laue-Langevin, Grenoble, France, April 25, 1972.

427. **Gamma Ray Asymmetry in Radiative n-p Capture of Polarized Neutrons**, Institut Laue-Langevin, Grenoble, France, March 16, 1973.
428. **T Invariance in Polarized Neutron Beta Decay**, Princeton University, Princeton, NJ, May 7, 1974.
429. **T Invariance in Polarized Neutron Beta Decay**, Yale University, New Haven, CT, October 25, 1974.
430. **L'Électron et le Proton Sont-Ils Vraiment Stables?**, Institut des Sciences Nucléaires, Grenoble, France, July 11, 1975.
431. **Is the Electron as Stable as You Think?**, Princeton University, Princeton, NJ, November 4, 1975.
432. **T Invariance in Polarized Neutron Beta Decay**, University of Pennsylvania, Philadelphia, PA, January 27, 1976.
433. **Projects and Prospects in Long Range Neutrino Physics –or– There's More to a Gold Mine than Gold**, University of Pennsylvania, Philadelphia, PA, December 1, 1977.
434. **Neutrino Astrophysics**, University of Pennsylvania, Philadelphia, PA, September 30, 1978.
435. **The Search for Cosmic Neutrinos**, Swarthmore College, Swarthmore, PA, November 29, 1978.
436. **Baryon Decay: Experiment**, University of Pennsylvania, Philadelphia, PA, October 6, 1979.
437. **Nucleon Stability**, Johns Hopkins University, Baltimore, MD, March 5, 1980.
438. **Proton Decay Experiments**, University of Pennsylvania, Philadelphia, PA, October 25, 1980.
439. **The Rise and Fall of Baryon Conservation**, University of Pennsylvania, Philadelphia, PA, February 11, 1981.
440. **The Homestake Water Čerenkov Nucleon Decay Experiment**, University of Pennsylvania, Philadelphia, PA, November 1981.
441. **The Search for Proton Decay**, Yale University, New Haven, CT, January 29, 1982.
442. **Results from the Homestake Proton Decay Search**, United States Department of Energy, Germantown, MD, November 9, 1982.
443. **The Homestake Tracking Spectrometer Proposal**, United States Department of Energy, Germantown, MD, November 10, 1982.
444. **The Homestake Program: Proton Decay**, University of Pennsylvania, Philadelphia, PA, November 12, 1982.
445. **The Status of Proton Decay Experiments**, City University of New York, New York, NY, December 15, 1982.
446. **Extraterrestrial Neutrino Detection at the Homestake Underground Laboratory**, University of Pennsylvania, Philadelphia, PA, November 4, 1983.
447. **Monopole Search and Neutrino Astrophysics with Liquid Scintillation Detectors**, University of Kansas, Lawrence, KS, February 13, 1984.
448. **Particle Physics and Astrophysics with Large Underground Detectors**, Drexel University, Philadelphia, PA, February 23, 1984.
449. **Status of the Homestake Monopole Search**, Indiana University, Bloomington, IN, March 6, 1984.

450. **Searching for the Grand Unified Monopole**, Los Alamos National Laboratory, Los Alamos, NM, April 4, 1984.
451. **The Great Monopole Hunt — Why and How?**, Indiana University, Bloomington, IN, June 13, 1984.
452. **The Great Monopole Hunt — Why and How?**, University of South Carolina, Columbia, SC, September 6, 1984.
453. **Recent Results from the Homestake Large Area Scintillation Detector**, Texas A & M University, College Station, TX, October 9, 1984.
454. **MACRO, A New Eye on the Cosmic Ray Universe**, Carleton University, Ottawa, Ontario, September 23, 1985.
455. **Searching for Magnetic Monopoles**, Drexel University, Philadelphia, PA, April 15, 1986.
456. **Double Beta Decay?**, Drexel University, Philadelphia, PA, February 24, 1987.
457. **Borex: A New Key to the Enigma of Solar Neutrinos**, Drexel University, Philadelphia, PA, May 26, 1988.
458. **Borex: A New Key to the Enigma of Solar Neutrinos**, Rutgers University, New Brunswick, NJ, October 31, 1988.
459. **Status Report on Borex, the Boron Solar Neutrino Experiment**, Drexel University, Philadelphia, PA, December 7, 1988.
460. **Borex, A Liquid Scintillation Solar Neutrino Experiment**, Caltech, Pasadena, CA, May 9, 1989.
461. **The Borexino Counting Test Facility**, United States National Science Foundation, Washington, DC, November 26, 1991.
462. **The PERRY Experiment, a Long Baseline Reactor Neutrino Oscillation Search**, Yale University, New Haven, CT, January 21, 1992.
463. **The PERRY Experiment**, Los Alamos National Laboratory, Los Alamos, NM, April 7, 1992.
464. **PERRY: A Long Baseline Reactor Neutrino Oscillation Experiment and Solar Neutrino Detector**, Lawrence Berkeley Laboratory, Berkeley, CA, May 22, 1992.
465. **CHOOZ and PERRY: Long Baseline Reactor Neutrino Oscillation Experiments**, Drexel University, Philadelphia, PA, April 22, 1993.
466. **Neutrino Oscillations**, Presentation to the Japan Society for the Promotion of Science, Drexel University, Philadelphia, PA, May 12, 1993.
467. **The Mass of the Neutrino**, Senior physics class, Friends Central School, Merion, PA, May 26, 1994.
468. **Review of the Solar Neutrino Situation**, Drexel University, Philadelphia, PA, June 10, 1994.
469. **Search for Neutrino Oscillations at a Nuclear Reactor**, University of Delaware, Newark, DE, October 13, 1994.
470. **Weighing the Neutrino**, Drexel University, Philadelphia, PA, May 16, 1996.
471. **Initial Results from the CHOOZ Neutrino Oscillation Experiment**, SUNY, Stony Brook, NY, December 4, 1997.
472. **Review of Reactor Neutrino Oscillation Experiments**, Oxford University, UK, October 13, 1998.

473. **Review of Reactor Neutrino Oscillation Experiments**, Rutherford Laboratory, UK, October 14, 1998.
474. **The CHOOZ Experiment**, University of Pennsylvania, December 1, 1998.

Literature Citations:

Total known number of citations exceeds 6885. Some of the most frequently cited works are the following:

NUMBER OF CITATIONS	PUBLICATION
1695	Limits on Neutrino Oscillations from the Chooz Experiment, *Phys. Lett.* **466**, 415 (1999).
1158	Search for Neutrino Oscillations on a Long Baseline at Chooz *Eur. Phys. J. C27:331-374,2003.*
1040	Initial Results from the Chooz Long Baseline Reactor Neutrino Oscillation Experiment, *Phys. Lett.* **420**, 397 (1998).
518	Measurement of the Atmospheric Neutrino Induced Upgoing Muon Flux Using MACRO, *Phys. Lett.* **434**, 451 (1998).
266	Matter Effects in Upward Going Muons and Sterile Neutrino Oscillations, *Phys. Lett.* **B517**, 59-66 (2001).
185	Measurements of Atmospheric Muon Neutrino Oscillations, *Eur.Phys.J.***C36**, 323-339 (2004).
158	First Supermodule of the MACRO Detector at Gran Sasso, *Nucl. Instrum. Meth.* **A324**, 337 (1993).
153	Atmospheric Neutrino Oscillations From Upward Through Going Muons, Phys.Lett.B566:35-44,2003.
149	Atmospheric Neutrino Flux Measurement Using Upgoing Muons, *Phys. Lett.* **B357** 481-486 (1995).
138	Vertical Muon Intensity Measured with MACRO at the Gran Sasso Laboratory, Phys.Rev.D52:3793-3802,1995.
134	Low-Energy Atmospheric Muon Neutrinos in MACRO *Phys. Lett.* **B478**, 5-13 (2000).
132	Final Results of Magnetic Monopole Searches with the MACRO Experiment. *Eur.Phys.J.***C25**, 511-522 (2002).
126	Limits on Dark Matter WIMPs Using Upward Going Muons in the MACRO Detector, Phys.Rev.D60:082002,1999.
119	Neutrino Astronomy with the MACRO Detector, *Astrophys.J.***546**, 1038-1054 (2001).

70 Seasonal Variations in the Underground Muon Intensity as Seen by MACRO, Astropart.Phys. 7 (1997) 109-124 .

69 The MACRO Detector at Gran Sasso. *Nucl.Instrum.Meth.***A486**, 663-707 (2002).

62 Search for Diffuse Neutrino Flux from Astrophysical Sources with MACRO, Astropart.Phys. 19 (2003) 1-13.

57 The MACRO Detector at the Gran Sasso Laboratory, *Nucl. Instrum. Meth.* **A264** 18 (1988).

54 Test of Baryon Conservation: A New Limit on the Nucleon Lifetime Lifetime, *Phys. Rev. Lett.* **47**, 1507 (1981).

42 The Observation of Upgoing Charged Particles Produced by Muons Astropart.Phys.9:105-117,1998.

41 Atmospheric Neutrino Induced Muons in the MACRO Detector, Nucl.Phys.Proc.Suppl.77:117-122,1999.

39 Measurement of the Decoherence Function with the MACRO Detector at Gran Sasso, Phys.Rev.D46:4836-4845,1992.

37 Study of the Ultrahigh-energy Primary Cosmic Ray Composition with the MACRO Experiment, Phys.Rev.D46:895-902,1992.

27 Decay Mode Independent Tests of Nucleon Stability, *Proc. Int'l. Conf. on Neutrino Physics and Neutrino Astrophysics*, Baksan Valley, USSR, June 1977 (Nauka, Moscow, 1978) **2**, 321.

27 New Experimental Limit on T Invariance in Polarized Neutron Beta Decay, *Phys. Rev. Lett.* **33**, 41 (1974).

26 Experimental Test of Charge Conservation and the Stability of the Electron, *Phys. Rev.* **D12**, 2582 (1975).

21 Nucleon Stability: A Geochemical Test Independent of Decay Mode, *Science* **197**, 989 (1977).

17 Search for a Nonzero Triple-Correlation Coefficient and New Experimental Limit on T Invariance in Polarized Neutron Beta Decay, *Phys. Rev.* **D13**, 2469 (1976).

Teaching:

Drexel University (1984-1995):

Academic year 1994–1995 Winter: PHY212, Modern Physics, (course director and lecturer) Graduate student research supervised – 3 students Cosupervised Ph.D. dissertation, M. Mittelbrunn, *Search for Fast Magnetic Monopoles with the MACRO Detector*, Drexel University, 1995.

Academic year 1994–1995 Fall: PHY212, Modern Physics, (course director and lecturer) Graduate student research supervised – 3 students

Academic year 1993–1994 Fall: PHY212, Modern Physics, PHY750, Graduate Introductory Particle Physics, *Winter:* PHY222, Modern Physics for Physics Majors, (course director and lecturer) *Spring:* PHY211, Electricity and Magnetism, (two sections) Graduate student research supervised – 4 students

Academic year 1992–1993 Fall: PHY211, Electricity and Magnetism, (two sections) *Winter:* PHY222, Modern Physics for Physics Majors, (course director and lecturer) *Spring:* PHY112, Waves and Optics, (two sections) Undergraduate student research supervised – 2 students Graduate student research supervised – 3 students

Academic year 1991–1992 Fall: N708, Electricity and Magnetism, (two sections) *Winter:* N709, Modern Physics (one section) and N719, Modern Physics for Physics Majors, (course director and lecturer) *Spring:* N707, Mechanics, (three sections) Undergraduate student research supervised – 1 student Graduate student research supervised – 2 students

Academic year 1990–1991 Fall: N708, Electricity and Magnetism, (two sections) *Winter:* N709, Modern Physics (one section) and N719, Modern Physics for Physics Majors, (course director and lecturer) *Spring:* N708, Electricity and Magnetism, (two sections) Undergraduate student research supervised – 1 student Graduate student research supervised – 2 students

Academic year 1989–1990 Fall: N707, Waves and Optics, (two sections) *Winter:* N709, Modern Physics (one section) and N719, Modern Physics for Physics Majors, (course director and lecturer) *Spring:* N708, Electricity and Magnetism, (two sections) Undergraduate student research supervised – 1 student Graduate student research supervised – 2 students

Academic year 1988–1989 Fall: N709, Modern Physics, (two sections) *Winter:* N709, Modern Physics, (course director and lecturer) *Spring:* N708, Electricity and Magnetism, (two sections) Undergraduate student research supervised – 3 students

Academic year 1987–1988 Fall: N709, Modern Physics, (two sections) *Winter:* N709, Modern Physics, (two sections) *Spring:* N709, Modern Physics, (one section, course director and lecturer) Graduate student research supervised – 1 student

Academic year 1986–1987 Fall: N709, Modern Physics, (two sections) *Winter:* N709, Modern Physics, (two sections) *Spring:* N709, Modern Physics, (one section, course director) Graduate student research supervised – 2 students

Academic year 1985–1986 Fall: N711, Introductory Physics, (two sections) *Winter:* N708, Introductory E & M, (two sections) *Spring:* N709, Modern Physics, (two sections, course co-director)

Academic year 1984–1985 Fall: N711, Introductory Physics, (two sections) *Winter:* N711, Introductory Physics, (one section) N712, Introductory Physics, (one section) *Spring:* N709, Modern Physics, (two sections)

University of Pennsylvania:

1980-1982

Cosupervised Ph.D. dissertation, M. Deakyne, *Search for Neutrino Bursts with the Homestake Water Cerenkov Detector*, University of Pennsylvania, 1982.

Spring 1981

Physics 504: Introduction to Astrophysics
First year graduate level lecture course surveying the entire field of astrophysics and cosmology.

Fall 1980

Physics 251: Topics in Modern Physics
Advanced undergraduate lecture course for non-majors surveying nuclear and particle physics with emphasis on topics of current interest.

Fall 1977

Physics 151: Introductory Physics
Large lecture course (approximately 85 students) in elementary physics for engineering and science majors based on Halliday & Resnick, *Fundamentals of Physics*, Vol. 1. Mechanics and Heat.

University of Maryland:

Spring 1975 and Spring 1976

Physics 161: General Physics
Large lecture course (approximately 250 students) in elementary physics for engineering and science majors based on Halliday & Resnick, *Fundamentals of Physics*, Vol. 1. Mechanics and Particle Dynamics.

Fall 1974 and Fall 1975

Physics 262: General Physics
Large lecture course (approximately 250 students) in elementary physics for engineering and science majors based on Halliday & Resnick, *Fundamentals of Physics*, Vol. 2. Thermodynamics and Electromagnetism.

Yale University:

Spring 1970 and Spring 1971

Physics 14: Introductory Physics
Elementary course in physics, based on Sears & Zemansky, *Modern University Physics*. Electricity, Magnetism and Modern Physics.

Fall 1969 and Fall 1970

Physics 12: Introductory Physics
Elementary course in physics, based on Sears & Zemansky, *Modern University Physics*. Mechanics and Heat.

Fall 1969

Physics 104A: Introduction to Experimental Atomic Physics
First year graduate lecture and laboratory course covering atomic spectroscopy, relativistic electron theory, fine and hyperfine structure of atoms, Zeeman and Stark effects, atomic beams, optical pumping and lasers.

Service: (through 1995)

1. Chair, Workshop on Future Experiments at the IMB Fairport Underground Laboratory, University of New Mexico, Albuquerque, NM, September 1992.
2. Chair, Franklin Symposium in Celebration of the Discovery of the Neutrino, Philadelphia, April 1992.
3. Departmental Planning Committee, 1989–
4. Departmental Tenure and Promotion Committee, 1989–
5. New Faculty Search Committee, 1988–
6. Thesis Defense Committee (Z.Q. Mao, May 1992).
7. Qualifying Examination Committee (F.C. Wang, 1992).
8. Qualifying Examination Committee (M. Mittelbrunn, 1991).
9. Advisor to Franklin medal committee (1991).
10. Director of world-class experimental physics laboratory.
11. Helped make Drexel attractive to first rate new faculty and graduate students.
12. Trained undergraduate and graduate physics students in particle physics.
13. Employed seven undergraduate students and eight graduate fellows, paying them approximately $130,000 in stipends plus $50,000 in tuition.

    Raymond Acobyan

    Richard Brice

    James Distel

    Dan Steinberg

    Nick Ide

    Scott Klasky

    Mark Litwin

    Aaron Manka

    James Panetta

    Michael Mittelbrunn

    Joel Saunders

    Jeffrey Steele

    Steven Tomshaw

    Octavia Williams

    Wang Fu Cheng
14. Organized major international MACRO experiment collaboration meeting at Drexel (1989).
15. Organized CHOOZ experiment collaboration meeting at Drexel (1995).
16. Enlisted outstanding physicist from AT&T Bell Labs as Research Professor (R.S. Raghavan, 1988).
17. Brought Nobel laureate physicist (L. Lederman) as Distinguished Lecturer (1987).
18. Extensive press coverage of our research.
19. Brought overhead to University, College and Department on more than $2M in external funding.

20. National Science Foundation, proposal referee.
21. U.S. Department of Energy, proposal referee.
22. International Science Foundation, proposal referee.
23. Particle Data Project, consultant on stable particles.
24. *Physical Review*, particle physics reviewer.
25. *Physical Review Letters*, particle physics reviewer.
26. SCIENCE magazine, nuclear and particle physics reviewer
27. Published 190 book and journal articles, presented 35 invited talks, together with 102 contributed papers, more than 23 proposals, more than 12 technical reports, and 52 professional colloquia and seminars.
28. Cited in the literature more than 6885 times.
29. Thesis Defense Committee (M. Mittelbrunn, Feb. 1995).

References:

Professor Frank T. Avignone
University of South Carolina
Department of Physics
Columbia, SC 29208
Tel: 803-777-4121
FAX: 803-777-3065

Professor Barry C. Barish
256-48 Caltech
Pasadena, CA 91125
Tel: 818-356-6684
E-mail: bcbp20@cithex.bitnet

Professor Carlo Bemporad
Istituto di Fisica dell'Università
Piazza Torricelli, 2
56100 Pisa, ITALY
Tel: 050-45222
E-mail: bemporad@pisa.infn.it

Professor Sidney A. Bludman
Department of Physics
University of Pennsylvania
Philadelphia, PA 19104
Tel: 215-898-8151
FAX: 215-898-8512
E-mail: bludman@penndrls.upenn.edu

Professor Arnon Dar
Department of Physics and Space Research Institute
Technion-Israel Institute of Technology
Haifa 32000, ISRAEL
Tel: 011-972-4-293-687
FAX: 011-972-4-221-514

Dr. Raymond Davis, Jr.
28 Bergen Lane
Blue Point, NY 11715
Tel: 516-363-6521 (home, call before 11 AM)
FAX: 516-282-5815

Dr. Yves Declais
Laboratoire d'Annecy de Physique des Particules
Annecy, France

Prof. Herve deKerret
College de France
Paris, France

Professor Sherman Frankel
Physics Department
University of Pennsylvania
Philadelphia, PA 19104
Tel: 215-898-8146
E-mail: sherman@penndrls.upenn.edu

Professor Stuart Freedman
Lawrence Berkeley Laboratory
Tel: 510-486-7850
E-mail: freedman@vax88.lbl.gov

Dr. Geoffrey L. Greene
Rm. A141, Bldg. 221
National Institute of Standards and Technology
Gaithersburg, MD 20899
Tel: 301-975-4842

Professor Vernon W. Hughes
Physics Department
Yale University
New Haven, CT 06511
Tel: 203-436-3566

Dr. William Kropp
Department of Physics
University of California
Irvine, CA 92717
Tel: 714-856-5146
E-mail: wkropp@ucivmsa.bitnet

Professor Kenneth Lande
Department of Physics
University of Pennsylvania
Philadelphia, PA 19104
Tel: 215-898-8176
FAX: 215-898-9336
E-mail: klande@pennsas.upenn.edu

Professor Paul Langacker
Department of Physics
University of Pennsylvania
Philadelphia, PA 19104
Tel: 215-898-5943
FAX: 215-898-9336
E-mail: pgl@penndrls.upenn.edu

Professor Robert Lanou
Department of Physics
Brown University
Providence, RI 02912
Tel: 401-863-2632
FAX: 401-863-2024
E-mail: lanou@brownvm.bitnet

Professor Frederick Reines
Department of Physics
University of California
Irvine, CA 92717
Tel: 714-856-7036
FAX: 714-856-7478

Professor Henry Sobel
Department of Physics
University of California
Irvine, CA 92717
Tel: 714-856-6431
FAX: 714-856-7478
E-mail: hsobel@ucivmsa.bitnet

Professor Robert Webb
Department of Physics
Texas A & M University
College Station, TX 77843-4242
Tel: 409-845-4012
E-mail: webb@tamphys.bitnet

Prof. B. Hobson Wildenthal, Provost
University of Texas at Dallas
Richardson, TX 75083
Tel: 505-277-3046 (old phone number)
E-mail: wildenbh@utdallas.edu

Professor John Bahcall
School of Natural Sciences
Institute for Advanced Study
Princeton, NJ 08540
Tel: 609-734-8054
FAX: 609-924-7592
E-mail: jnb@iassns.bitnet

Professor E. Bellotti
Dipartimento di Fisica dell'Università
Università degli Studi di Milano
Via Celoria, 16
I-20133 Milano, ITALY
Tel: 011-39-2-239-2301
E-mail: bellotti@milano.infn.it

Professor Thomas K. Gaisser
Bartol Research Foundation
University of Delaware
Newark, DE 19716
Tel: 302-451-8113
FAX: 302-831-1843
E-mail: gaisser@udbri@bartol.span

Professor Arthur B. McDonald
Department of Physics
Queen's University
Kingston, ON K7L 3N6
CANADA
Tel: 613-545-2702
FAX: 613-545-6463
E-mail: mcdonald@mips2.phy.queensu.ca

Professor Charles Peck
356-48 Caltech
Pasadena, CA 91125
Tel: 818-356-6679
E-mail: cpeck@cithex.hepnet

Professor Todor Stanev
Bartol Research Foundation
University of Delaware
Newark, DE 19716
Tel: 302-451-1495
FAX: 302-831-1843
E-mail: stanev@bripv2.bartol.udel.edu

Dr. Floyd Stecker
NASA Goddard Space Flight Center
Greenbelt, MD
Tel: 301-286-6057
FAX: 301-286-3391

Professor Robert Svoboda
Department of Physics
Louisiana State University
Baton Rouge, LA
Tel: 504-388-8695
FAX: 504-388-5855
E-mail: phsvob@lsuvax.sncc.lsu.edu

Professor John D. Vergados
Department of Physics
University of Ioannina
GR-45110 Ioannina, GREECE
Tel: 011-30-651-21926
FAX: 011-30-651-92631
E-mail: vergados@grioanun.bitnet

Professor Gaurang B. Yodh
Department of Physics
University of California
Irvine, CA 92717
Tel: 714-856-6975
FAX: 714-856-7478
E-mail: gyodh@ucivmsa.bitnet

Professor Gian Paolo Bellini
Dipartimento di Fisica dell'Università
Università degli Studi di Milano
Via Celoria, 16
I-20133 Milano, ITALY
Tel: 2 239.2370
Telex: 334687 INFNMI
E-mail: bellini@vaxmi.infn.it

Professor Richard M. Heinz
Physics Department
Indiana University
Bloomington, IN 47401
Tel: 812-855-9235
E-mail: rmhgut@ind.hepnet

Dr. R.S. Raghavan
Room 1E432
AT&T Bell Laboratories
600 Mountain Ave.
Murray Hill, NJ 07974
Tel: 201-582-4351
E-mail: raju@physics.att.com

Professor Peter Trower
Department of Physics
VPISU
Blacksburg, VA 24061
Tel: 703-231-6230
E-mail: trower@vtcc1.bitnet

Professor Enzo Iarocci
Laboratori Nazionali Frascati INFN
Casella Postale 13
00044 Frascati, ITALY
Tel: 06-9403424
Telex: 614122
E-mail: iarocci@vaxlnf.infn.it

Professor Martin Deutsch
MIT
43 Reservoir Street
Cambridge, MA 02138
Tel: 617-547-7138
E-mail: deutsch@mitlns.bitnet

Professor Giorgio Giacomelli
Dipartimento di Fisica dell'Università
Via Irnerio, 46
40126 Bologna, ITALY
Tel: 051-244190
Telex: 520634
E-mail: giacomelli@vaxbo.infn.it