Harry S. Miley, Ph.D.

Desert Research Institute

Employment History:

Desert Research Institute	7/23 - present
Laboratory Fellow, PNNL	8/03 - 6/23
Staff Scientist, PNNL	4/95 - 8/03
Senior Research Scientist, PNNL	3/90 - 4/95
Adjunct Faculty, Washington State University	9/91 - 9/92
Research Scientist, PNNL	6/87 - 3/90

Professional Preparation:

Washington State Academy of Sciences	2022
Fellow, Institute for Nuclear Theory	Fall 2002
Fellow, Aspen Center for Physics	Spring 2002
JPL Summer School for Planetary Science	1990
Ph.D. Physics, University of South Carolina	1987
B.S. Physics, South Carolina College	1982

National Involvement and Leadership Experience:

Interagency Verification and Monitoring Task Force: Advise Interagency on issues related to nuclear material collection and analysis. The VMTF is composed of representatives from many US Government organizations. Wrote numerous US position papers later adopted as US verification policy.

US Delegation to Comprehensive Nuclear Test Ban Treaty Working Group: Advise State Department on issues related to treaty verification at technical working group meetings in Vienna. On numerous occasions jointly or solely represented the US in technical negotiation sessions of the CTBT in Vienna, and in P-5 technical meetings. This activity funded by NNSA/NA-24, including exploratory interagency considerations of future weapons test site transparency regimes and international cooperation under EVIR-54.

Radionuclide Expert Group (RNEG): Developed and presented many US contributions in international technical meetings related to the development of the CTBT Verification Regime. Issues ranged from ultra-low level measurements to Fukushima debris measurements, including atmospheric transport modelling of measurement networks and the impact of medical isotope production emissions.

Radionuclide Technical Subject Leader of On Site Inspection: Led radionuclide inspection subteam in training and in Integrated Field Exercise 2014 (IFE14), later published new search scheme for investigating unknown inspection areas. IFE14 was the largest non-proliferation field exercise in history. NNSA Administrator Klotz gave Dr. Miley the NNSA Bronze Award for IFE14 contributions.

PNNL Senior Scientist, Nuclear Explosion Monitoring: Served NNSA/NA-22, DTRA, and Department of State for 24 years as senior expert on automated monitoring, analysis pipelines, and next generation equipment.

Majorana Collaboration for ^{76}Ge Neutrino Mass Experiment: Project designer of the Majorana Collaboration, 100 scientists from 4 national labs, 6 universities, in institutes in Russia and Japan. This Collaboration seeks to determine the mass and character of the electron neutrino by constructing an array of ultra-low background germanium detectors operated deep underground.

Technical Experience:

Radionuclide Aerosol Sampler/Analyzer: Led team of scientists and engineers of the Nuclear Explosion Monitoring program on high-profile project to develop new aerosol sampling technology to detect nuclear weapon explosions. The patented new approach to automated air sampling is orders of magnitude more sensitive than previously available commercially technology. The RASA is now commercially available and is deployed in the Comprehensive Test Ban Treaty monitoring network. The RASA team won an R&D 100 Award in 1998 and a Federal Laboratory Consortium award in 2000.

High-Sensitivity, Low Profile Neutron Detector: Led team of scientists and engineers to rapidly develop a system for detection of plutonium diversion at traffic choke points. The sensor is constructed of a new type of scintillating fiber optics sensitive to thermal neutrons and gamma rays. The original project was accelerated to take only 1.5 years. As a result, pre-existing technology was shrunk many times into a 2.54-cm-thick package. This sensor was later networked with velocity and range sensors to provide real-time neutron/gamma measurement, as opposed to simply a 'detect' on drive-by. In addition, the gamma/neutron separation logic has been shrunk to a single field programmable gate array.

Enhanced Sensitivity through Pulse Processing: Led a scientific investigation in to the benefits of electronic pulse analysis of germanium signals. This three-year effort yielded excellent results in several key scenarios, up to factor of 20 in signal to noise enhancement. Importantly, this project developed a post-doc into a high-performing staff member.

Ultra-Low Background Radionuclide Measurement Technology:

PNNL-USC Experiment: Design and construction of PNNL-USC detectors with the lowest reported levels of radioisotopic contamination, six orders lower than typical low background detectors. In 1990 the PNNL-USC collaboration published a credible, subsequently-confirmed measurement of the two-neutrino decay mode half life of ^{76}Ge at about 10^{21} years.

Ultra-pure Copper: Moderated the development of a new source of ultra-pure copper, as a collaboration between users (physics), producers (electrochemistry) and those who measure trace impurities (ICPMS assay). This effort has led to copper measured to have < 1 microBq/kg ^{232}Th, the lowest yet measured.

Majorana Project: Development of a pure science project capable of determining the effective Majorana mass of the neutrino. Dr. Miley grew the project from an idea to a large collaboration, designing the measurement and building a broad collaboration between US and international labs and universities. This topic area or this project have been reviewed and recommended as the top priority of a cross-divisional APS neutrino science review, a Neutrino Science Assessment Group, a special DOE panel, and a DOE Long Range Planning group.

Related Experience:

- Leader and member of Promotion Advisory Committee of PNNL from 2003 to 2023
- Worked extensively as mentor with mid-career staff and students, but also international inspectors.
- Created and taught nuclear inspection science to about 100 international inspectors.
- Organizing Committee of the Methods and Applications of Radioanalytical Chemistry conference, a joint ACS triennial meeting that is the world's largest radioanalytical chemistry meeting.

Affiliations: Washington State Academy of Science, Phi Beta Kappa, and Sigma Pi Sigma.

Publication History (via Google Scholar, February 2024)

- *Over 250 publications*
- Citations = 9843, h-index = 44

Google Scholar Citation Page

Recent Publications

1. Goodwin, Matthew A; Davies, Ashley V; Britton, Richard; Miley, Harry S; Eslinger, Paul W; Hoffman, Ian; Ungar, Kurt; Mekarski, Pawel; Botti, Adrian. 2024 Radionuclide measurements of the international monitoring system. Journal of Environmental Radioactivity, 272, 107357
2. Eslinger, Paul W; Miley, Harry S; Johnson, Christine M; Sarathi, Ramesh S; Schrom, Brian T. 2023 Impact of Environmental backgrounds on atmospheric monitoring of nuclear explosions. *Pure and Applied Geophysics*, 180, no. 4, 1489-1520
3. Johnson, Tim C; Knox, HA; Strickland, C; Johnson, C; Lowrey, J; Sprinkle, DP; Linneman, D; Vermeul, V; Robey, E; Chojnicki, K. 2023 3D time-lapse electrical resistivity imaging of rock damage patterns and gas flow paths resulting from two underground chemical explosions. *Pure and Applied Geophysics*, 180, no. 4, 1439-1455
4. Miley, Harry S; Eslinger, Paul W. 2023 Impact of industrial nuclear emissions on nuclear explosion monitoring. *Journal of Environmental Radioactivity*, 257, 107081
5. Eslinger, Paul W; Miley, Harry S; Burnett, Jonathan L; Lidey, Lance S; Mendez, Jennifer M; Schrom, Brian T; Sharma, Manish K. 2023 Projected network performance for next generation aerosol monitoring systems. *Journal of Environmental Radioactivity*, 257, 107088
6. Eslinger, Paul W; Miley, Harry S; Rosenthal, W Steven; Schrom, Brian T. 2023 Nuclear explosion monitoring network design considerations. *Journal of Environmental Radioactivity*, 270, 107307
7. Eslinger, Paul W; Miley, Harry S; Schrom, Brian T. 2022 Investigations of association among atmospheric radionuclide measurements. *Journal of Environmental Radioactivity*, 241, 106777
8. Rosenthal, W Steven; Eslinger, Paul W; Schrom, Brian T; Miley, Harry S; Baxter, Doug J; Fast, Jerome D. 2022 Enabling probabilistic retrospective transport modeling for accurate source detection. *Journal of Environmental Radioactivity*, 247, 106849
9. Eslinger, Paul W; Ely, James H; Lowrey, Justin D; Miley, Harry S. 2022 Projected network performance for multiple isotopes using next-generation xenon monitoring systems. *Journal of Environmental Radioactivity*, 251, 106963
10. Eslinger, Paul W; Miley, Harry S. 2022 Projected network performance for next-generation xenon monitoring systems. *Journal of Environmental Radioactivity*, 251, 106976
11. Mangel, Adam R; Johnson, Tim C; Liezers, Martin; Wietsma, Thomas W; Carman, April J; Lowrey, Justin David; Johnson, Christine; Rockhold, Mark; Miley, Harry. 2022 Subsurface Explosion Damage Imaging: Linking Electrical Conductivity Differences to Fracture Generation-Laboratory Scale Experiments. *AGU Fall Meeting Abstracts*, 2022, NG24B-05
12. Burnett, Jonathan L; Miley, Harry S. 2021 Performance characterization of the Radionuclide Aerosol Sampler/Analyzer air sampler during a high-activity release event. *Nuclear Instruments and Methods in Physics Research Section A: Accelerators, Spectrometers, Detectors and Associated Equipment*, 985, 164650
13. Miley, Harry S; Eslinger, Paul W; Friese, Judah I. 2021 Examining Nuisance Aerosol Detections in Light of the Origin of the Screening Process. 2021 PNNL-32446, https://doi.org/10.2172/1843271
14. Alexander, TR; Aalseth, CE; Back, HO; Bowyer, TW; Day, AR; Fuller, ES; Hayes, JC; Hoppe, EW; Hossbach, TW; Humble, PH. 2020 Characterization of a low background proportional counter for a high throughput Argon-37 collection and measurement system. *Nuclear Instruments and Methods in Physics Research Section A: Accelerators, Spectrometers, Detectors and Associated Equipment*, 954, 161794
15. Eslinger, Paul W; Lowrey, Justin D; Miley, Harry S; Rosenthal, William S; Schrom, Brian T. 2020 Source type estimation using noble gas samples. *Journal of Environmental Radioactivity*, 225, 106439
16. Rosenthal, William; Eslinger, Paul; Schrom, Brian; Baxter, Douglas; Miley, Harry. 2020 Enabling High-throughput Atmospheric Simulations for Radionuclide Background and Source Estimation. *AGU Fall Meeting Abstracts*, 2020, S050-02
17. Eslinger, Paul W; Lowrey, Justin D; Miley, Harry S; Rosenthal, W Steven; Schrom, Brian T. 2019 Source term estimation using multiple xenon isotopes in atmospheric samples. *Journal of Environmental Radioactivity*, 204, 111-116
18. Miley, Harry S; Burnett, Jonathan L; Chepko, Ariane B; Devoy, Clive L; Eslinger, Paul W; Forrester, Joel B; Friese, Judah I; Lidey, Lance S; Morris, Scott J; Schrom, Brian T. 2019 Design considerations for future radionuclide aerosol monitoring systems. *Journal of Environmental Radioactivity*, 208, 106037

19. Burnett, Jonathan L; Miley, Harry S; Bowyer, Theodore W; Cameron, Ian M. 2018 The 2014 integrated field exercise of the comprehensive nuclear-test-ban treaty revisited: the case for data fusion. *Journal of Environmental Radioactivity*, 189, 175-181
20. Greenwood, Lawrence R; Cantaloub, Michael G; Burnett, Jonathan L; Myers, Allan W; Overman, Cory T; Forrester, Joel B; Glasgow, BG; Miley, Harry S. 2017 Low-background gamma-ray spectrometry for the international monitoring system. *Applied Radiation and Isotopes*, 126, 240-242
21. Miley, Harry S; Burnett, Jonathan L; Foxe, Michael P; Haas, Derek A; Keillor, Martin E; Lowrey, Justin D; Mayer, Michael F; McIntyre, Justin I; Wood, Jeffrey S. 2017 The potential detection of low-level aerosol isotopes from new civilian nuclear processes. *Applied Radiation and Isotopes*, 126, 232-236
22. Burnett, Jonathan L; Cantaloub, Michael G; Mayer, Michael F; Miley, Harry S. 2017 Development of a multidimensional gamma-spectrometer. *Journal of Radioanalytical and Nuclear Chemistry*, 312, 81-86
23. Haas, Derek A; Eslinger, Paul W; Bowyer, Theodore W; Cameron, Ian M; Hayes, James C; Lowrey, Justin D; Miley, Harry S. 2017 Improved performance comparisons of radioxenon systems for low level releases in nuclear explosion monitoring. *Journal of Environmental Radioactivity*, 178, 127-135
24. McIntyre, Justin I; Agusbudiman, Agung; Cameron, Ian M; Dumais, Johannes R; Eslinger, Paul W; Gheddou, Abdelhakim; Khrustalev, Kirill; Marsoem, Pujadi; Miley, Harry S; Nikkinen, Mika. 2016 Real-time stack monitoring at the BaTek medical isotope production facility. *Journal of Radioanalytical and Nuclear Chemistry*, 308, 311-316
25. Lowrey, Justin D; Eslinger, Paul W; Haas, Derek A; Miley, Harry S. 2016 A consideration of radionuclide particulate resuspension as a verification tool in the CTBT On-Site Inspection verification component. *Journal of Radioanalytical and Nuclear Chemistry*, 307, 2433-2437
26. Lowrey, Justin D; Eslinger, Paul W; Miley, Harry S. 2016 Future xenon system operational parameter optimization. *Journal of Radioanalytical and Nuclear Chemistry*, 307, 2427-2432
27. Williams, Richard M; Aalseth, Craig E; Bowyer, Ted W; Day, Anthony R; Fuller, Erin S; Haas, Derek A; Hayes, James C; Hoppe, Eric W; Humble, Paul H; Keillor, Martin E. 2016 Development of a low-level 37Ar calibration standard. *Applied Radiation and Isotopes*, 109, 430-434
28. Miley, Harry S; Haas, Derek A. 2016 Capabilities of an on-site inspection. *Journal of Radioanalytical and Nuclear Chemistry*, 307, 2611-2616
29. Burnett, Jonathan L; Miley, Harry S; Milbrath, Brian D. 2016 Radionuclide observables during the integrated field exercise of the comprehensive nuclear-test-ban treaty. *Journal of Environmental Radioactivity*, 153, 195-200
30. Eslinger, Paul W; Cameron, Ian M; Dumais, Johannes Robert; Imardjoko, Yudi; Marsoem, Pujadi; McIntyre, Justin I; Miley, Harry S; Stoehlker, Ulrich; Widodo, Susilo; Woods, Vincent T. 2015 Source term estimates of radioxenon released from the BaTek medical isotope production facility using external measured air concentrations. *Journal of Environmental Radioactivity*, 148, 15-Oct
31. Eslinger, Paul W; Bowyer, Ted W; Cameron, Ian M; Hayes, James C; Miley, Harry S. 2015 Atmospheric plume progression as a function of time and distance from the release point for radioactive isotopes. *Journal of Environmental Radioactivity*, 148, 123-129
32. Bowyer, Ted W; Eslinger, Paul W; Cameron, Ian M; Friese, Judah I; Hayes, James C; Metz, Lori A; Miley, Harry S. 2014 Potential impact of releases from a new Molybdenum-99 production facility on regional measurements of airborne xenon isotopes. *Journal of Environmental Radioactivity*, 129, 43-47
33. Eslinger, Paul W; Friese, Judah I; Lowrey, Justin D; McIntyre, Justin I; Miley, Harry S; Schrom, Brian T. 2014 Estimates of radioxenon released from Southern Hemisphere medical isotope production facilities using measured air concentrations and atmospheric transport modeling. *Journal of Environmental Radioactivity*, 135, 94-99

Topical Publications:

I - RASA

1. Miley, H. S., S. M. Bowyer, and R. W. Perkins. 1995. Airborne Particulate Radionuclides of Concern and Their Automatic Monitoring for Treaty Verification. *Transactions of the American Nuclear Society* 73: 81-2.

2. Perkins, R. W., H. S. Miley, W. K. Hensley, and K. H. Abel. 1996. Airborne Radionuclides of Concern and Their Measurement in Monitoring a Comprehensive Test Ban Treaty. *NATO Advanced Study Institute: Monitoring a Comprehensive Test Ban Treaty. NATO ASI Series E Applied Sciences E*. S. Husebye, and A. M. Dainty, p. 143-56. Kluwer Academic.

3. Bowyer, S. M., and H. S. Miley. 1996. *Automated particulate sampler field test model operations guide*, PNNL-10957. Pacific Northwest National Laboratory, Richland, WA.

4. Miley, H. S. et al. 1997. Radionuclide Measurements for the Comprehensive Test Ban Treaty. *Proceedings of the 19th Annual CTBT Seismic Workshop*.

5. Bowyer, S. M., H. S. Miley, R. C. Thompson, and C. W. Hubbard. 1997. Automated Particulate Sampler for Comprehensive Test Ban Treaty Verification (the DOE radionuclide aerosol sampler/analyzer). *IEEE Transactions on Nuclear Science* 44, no. 3. 1: 551-6.

6. McKinnon, A. D., C. W. Hubbard, and H. S. Miley. 1997. The Radionuclide Aerosol Sampler/Analyzer. *QNX News* 11, no. 2: 7-12.

7. McKinnon, A. D., C. W. Hubbard, and H. S. Miley. 1998. Developing verification technology to enforce the Comprehensive Nuclear-Test-Ban Treaty. *Scientific Computing & Automation*, no. 5: 43-6.

8. Miley, H. S., S. M. Bowyer, C. W. Hubbard, A. D. McKinnon, R. W. Perkins, R. C. Thompson, and R. A. Warner. 1998. Automated aerosol sampling and analysis for the Comprehensive Test Ban Treaty. *IEEE Transactions on Nuclear Science* 45, no. 3. 1: 1034-9.

9. Bowyer, S. M., D. C. Gerlach, H. S. Miley, S. L. Pratt , C. W. Thomas, J. F. Wacker, and M. J. Kniedler. 1998. Radiochemistry of the 3m Sbmf-40vf Filter Media Used by the DOE CTBT Radionuclide Aerosol Sampler/Analyzer (RASA). *Journal of Radioanalytical and Nuclear Chemistry* 235, no. 1-2: 121-24.

10. Mckinnon, A. D., S. M. Bowyer, C. W. Hubbard, H. S. Miley, R. W. Perkins, R. C. Thompson, and R. A. Warner. 1998. Environmental Measurements with a Comprehensive Nuclear Test Ban Treaty Radionuclide Particulate Monitor. *Journal of Radioanalytical and Nuclear Chemistry* 235, no. 1-2: 115-19.

11. Miley, H. S. , S. M. Bowyer, C. W. Hubbard, A. D. Mckinnon, R. W. Perkins, R. C. Thompson, and R. A. Warner. 1998. A Description of the DOE Radionuclide Aerosol Sampler/Analyzer for the Comprehensive Test Ban Treaty. *Journal of Radioanalytical and Nuclear Chemistry* 235, no. 1-2: 83-87.

12. Harris, M. K., P. B. Herrington, H. S. Miley, J. E. Ellis, A. D. McKinnon, and D. E. St Pierre. 1999. Data Authentication Demonstration Radionuclide Stations. *21st Seismic Research Symposium: Technologies for Monitoring the Comprehensive Nuclear-Test-Ban Treaty*, p. 331-37 Los Alamos, NM: Los Alamos National Laboratory.

13. Miley, H. S., and R. J. Arthur. 1999. *PNNL Review of Proposed Relevant Radionuclide List*, PNNL-12194. Pacific Northwest National Laboratory, Richland, WA.

14. Miley, H. S. et al. 1999. *Relevant Radionuclide List*, PNNL-12263. Richland, WA.

15. Miley, H. S., R. J. Arthur, E. A. Lepel, S. L. Pratt, and C. W. Thomas. 1999. Evaluation of laboratory detection systems for fission product detection. *IEEE Nuclear Science Symposium and Medical Imaging Conference*. IEEE Nuclear Science Symposium. Conference Record.

16. Miley, H. S. et al, 1999. *RASA Filter Processing Update*, PNNL-12235. Richland, WA.

17. Bowyer, T. W., K. H. Abel, J. E. Ellis, J. C. Hayes, T. R. Heimbigner, H. S. Miley, M. E. Panisko, P. L. Reeder, and R. C. Thompson. 2000. Radionuclide measurements for the Comprehensive Test Ban Treaty. *Transactions of the American Nuclear Society* 83: 55.

18. McKinnon, A. D., J. E. Ellis, H. S. Miley, and D. E. St Pierre. 2000. Data Authentication in a Distributed Network of Nuclear Monitoring Systems. *1999 IEEE Nuclear Science Symposium*Piscataway, NJ: IEEE.

19. Miley, H. S. 2000. *Summary of DOE/NV-317*, PNNL-13211. Pacific Northwest National Laboratory, Richland, WA.

20. Miley, H. S., D. N. Anderson, R. J. Arthur, T. R. Heimbigner, G. R. Kiebel, and R. C. Thompson. 2000. Radionuclide Operational Research & Development. *22nd Annual DoD/DOE Seismic Research Symposium: Planning for Verification of and Compliance with the Comprehensive Nuclear-Test-Ban Treaty (CTBT)*, 06-03Defense Threat Reduction Agency (DTRA).

21. Thomas, C. W., S. L. Pratt, R. J. Arthur, and H. S. Miley. 2000. "Chemical Processing of RASA Filters for CTBT." PNNL-13212. Richland, WA.

22. Miley, H. S., R. J. Arthur, and R. A. Warner. 2000. Automatic Monitoring System for Radioactive Aerosols. *Abstracts of Papers of the American Chemical Society* 220: 118-NUCL.

23. Arthur, R. J., T. W. Bowyer, J. C. Hayes, T. R. Heimbigner, J. I. McIntyre, and H. S. Miley. 2001. Radionuclide Measurements for Nuclear Explosion Monitoring. *23rd Seismic Research Review: Worldwide Monitoring of Nuclear Explosions*, p. 57-63Los Alamos, NM: Los Alamos National Laboratory.

24. Arthur, R. J., and H. S. Miley. 2001. Evaluation of An Above-Ground Ultra-Low Background Gamma-Ray Spectrometer For Aerosol-Borne Fission Product Detection. *Proceedings of the Fifth International Conference on Methods and Applications of Radioanalytical Chemistry MARC V:* S. B. Carpenter, and R. H. Filby, p. 364-91Amsterdam: Elsevier.

25. Thomas, C. W., S. L. Pratt, R. J. Arthur, and H. S. Miley. 2001. Chemical Processing of RASA Filters for CTBT. *Proceedings of the Fifth International Conference on Methods and Applications of Radioanalytical Chemistry MARC V:* S. B. Carpenter, and R. H. Filby. Amsterdam: Elsevier.

26. Miley, H. S., R. J. Arthur, E. A. Lepel, S. L. Pratt, and C. W. Thomas. 2001. Evaluation of Fission Product Isotopes for Field or Laboratory Detection. *Journal of Radioanalytical and Nuclear Chemistry* 248, no. 3: 651-56.

27. Arthur, R. J., H. S. Miley, and L. C. Todd. 2002. Be-7 Cross-Talk in RASA Continuous Air Samplers. *24th Seismic Research Symposium - Nuclear Explosion Monitoring: Innovation and Integration*, p. 689-93 Los Alamos, NM: Los Alamos National Laboratory.

II - Neutrino Physics

A. Double Beta Decay

28. Brodzinski, R. L., D. P. Brown, J. C. Jr. Evans, W. K. Hensley, J. H. Reeves, N. A. Wogman, F. T. Avignone, H. S. Miley, and R. S. Moore. 1984. A Large-Volume Ultralow-Background Germanium

Coincidence/Anticoincidence Gamma-Ray Spectrometer. *Proceedings of the Fifth International Conference on Nuclear Methods in Environmental and Energy Research*, p. 118.

29. Avignone, F. T., R. L. Brodzinski, D. P. Brown, J. C. Evans, W. K. Hensley, H. S. Miley, J. H. Reeves, and N. A. Wogman. 1985. Ultralow-Background Study of Neutrinoless Double Beta-Decay of Ge-76 - New Limit on the Majorana Mass of Nu-E. *Physical Review Letters* 54, no. 21: 2309-12.

30. Brodzinski, R. L., D. P. Brown, J. C. Evans, W. K. Hensley , J. H. Reeves, N. A. Wogman, F. T. Avignone, and H. S. Miley. 1985. The Ge-76 Double-Beta Decay Experiment at Homestake.*Solar Neutrinos and Neutrino Astronomy*, 50-59.

31. Avignone, F. T., H. Miley, R. L. Brodzinski, and J. H. Reeves. 1986. ^{76}Ge Beta-Beta Decay Experiments and Their Analyses: an Update. *Intersections between Particle and Nuclear Physics*, 1017-24. New York: American Institute of Physics.

32. Avignone, F. T. III., S. P. Ahlen, R. L. Brodzinski, S. Dimopolous, A. K. Drukier, A. Gelmini, B. W. Lynn, H. S. Miley, J. H. Reeves, D. N. Spergel, and G. D. Starkman. 1986. Ultralow-Background Searches for Beta-Beta Decay, Cold Dark Matter and Solar Axions. *Weak and Electromagnetic Interactions in Nuclei. Proceedings of the International Symposium, 1-5 July 1986,Heidelberg, West Germany*Springer-Verlag.

33. Avignone, F. T., R. L. Brodzinski, W. K. Hensley, H. S. Miley, and J. H. Reeves. 1986. New Experimental Limit on the Stability of the Electron. *Physical Review D* D34, no. 1: 97-100.

34. Avignone, F. T., R. L. Brodzinski, J. C. Evans, W. K. Hensley, H. S. Miley, and J. H. Reeves. 1986. Search for the Double-Beta Decay of Ge-76. *Physical Review C* C34, no. 2: 666-77.

35. Avignone, F. T. III, S. P. Ahlen, R. L. Brodzinski, S. Dimopolous, A. K. Drukier, G. Gelmini, B. W. Lynn, H. S. Miley, J. H. Reeves, D. N. Spergel, and G. D. Starkman. 1987. Experimental Bounds on Beta Beta-Decay, Cold Dark Matter and Solar Axions with an Ultralow Background Detector. *Proceedings 7th International Vanderbilt Conference.* World Scientific.

36. Avignone, F. T. III, R. L. Brodzinski, H. S. Miley, and J. H. Reeves. Experimental Evidence Suggestive of Neutrinoless Beta-Beta Decay with a Near Massless Particle. *Proceedings of the Third Regular Meeting of the Division of Particles and Fields of the American Physical Society*, p. 359. World Scientific.

37. Avignone, F. T. III, H. S. Miley, R. L. Brodzinski, and J. H. Reeves. 1987. Analysis and Interpretation of a Large Body of ^{76}Ge Zero-Neutrino Double-Beta Decay Data. *Physical Review D (Particles and Fields)* D35, no. 5: 1713-15.

38. Avignone, F. T., R. L. Brodzinski, H. S. Miley, and J. H. Reeves. 1987. Possible Evidence for Neutrinoless Beta-Beta-Decay with the Emission of Majorons. *Abstracts of Papers of the American Chemical Society* 194: 9-NUCL.

39. Avignone, F. T., R. L. Brodzinski, H. S. Miley, and J. H. Reeves. 1987. Alternate Interpretation of the Results From the St-Gotthard- Laboratory Double-Beta-Decay Experiment. *Physics Letters B* B198, no. 2: 253-54.

40. Avignone, F. T., R. L. Brodzinski, J. H. Reeves, and H. S. Miley. 1988. Status of Beta Beta - Decay Experiments in the Year of the Reines Fest. *13th International Conference on Neutrino Physics and Astrophysics.*

41. Avignone, F. T. III, R. L. Brodzinski, C. D. Liles, H. S. Miley, J. H. Reeves, W. L. Roberts, and A. J. Szady. 1988. International Germanium Experiment (IGEX). *Proceedings of the XXIIIrdRencontre de Moriond. Series: Moriond Workshops. 5th Force Neutrino Physics, 23-30 Jan. 1988, Les Arcs, France*.

42. Avignone, F. T. III, R. L. Brodzinski, H. S. Miley, and J. H. Reeves. 1988. Recent Progress in Ultralow Background Ge Detector Searches for the Double Beta Decay of Ge-76, Dark Matter Candidates, and Solar Axions. *Neutrino Physics, the Proceedings of an International Workshop*, p. 191Springer-Verlag.

43. Avignone, F. T. III, R. L. Brodzinski, J. H. Reeves, and H. S. Miley. 1988. Status of Selected Neutrinoless Beta-Beta Decay Experiments. *Proceedings of the 3rd Conference on the Intersections between Particle and Nuclear Physics*.

44. Avignone, F. T. III, R. L. Brodzinski, J. H. Reeves, and H. S. Miley. 1988. Status of Selected Neutrinoless Beta-Beta Decay Experiments. *Proceedings of the Intersection between Particle and Nuclear Physics*, 946-52.

45. Avignone, F. T. III, R. L. Brodzinski, H. S. Miley, and J. H. Reeves. 1989. Experimental beta beta -decay: a review of recent progress. *Weak and Electromagnetic Interactions in Nuclei. Proceedings of the International Symposium (WEIN-89)*.

46. Miley, H. S., F. T. Avignone, R. L. Brodzinski, J. I. Collar, and J. H. Reeves. 1990. Suggestive Evidence for the 2-Neutrino Double-Beta Decay of Ge- 76. *Physical Review Letters* 65, no. 25: 3092-95.

47. Avignone, F. T., R. L. Brodzinski, J. I. Collar, C. K. Guerard, H. S. Miley, and J. H. Reeves. 1991. Measurements of the Half-Life of the 2-Upsilon-Beta-Beta-Decay of Ge-76. *Journal of Physics G-Nuclear and Particle Physics* 17 (Suppl): S181-S192.

48. Barabash, A. S., F. T. III Avignone, C. K. Guerard, R. L. Brodzinski, H. S. Miley, J. H. Reeves, and V. I. Umatov. 1991. First Results from the Soviet-American Experiment on Double-beta Decay of ^{100}Mo to the Excited States of ^{100}Ru. Proceedings of the XXVIth Rencontre de Moriond. Massive Neutrinos - Tests of Fundamental Symmetries, 26 Jan.-2 Feb. 1991, Les Arcs,France.

49. Avignone, F. T., R. L. Brodzinski, C. K. Guerard, I. V. Kirpichnikov, H. S. Miley, V. S. Pogosov, J. H. Reeves, A. S. Starostin, and A. G. Tamanyan. 1991. Confirmation of the Observation of 2-Nu Beta-Beta Decay of Ge- 76. *Physics Letters B* 256, no. 3-4: 559-61.

50. Avignone, F. T., J. I. Collar, C. K. Guerard, R. L. Brodzinski, H. S. Miley, and J. H. Reeves. 1991. A Report of Some Recent Double-Beta Decay Experiments. *Abstracts of Papers of the American Chemical Society* 202: 13-NUCL.

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