

George Coutrakon

2251 Palmer Circle
Naperville, IL 60564

Updated: January 2018
Date of Birth: December 15, 1952

EDUCATION

1983 PhD in Physics, State University of New York at Stony Brook, Thesis research title: “*Hadron Identification at 200 GeV Using a Ring Imaging Cherenkov Detector.*”
1976 B.A. in Math and Physics from University of Colorado at Boulder

PROFESSIONAL EXPERIENCE

Nov 2008-Present Professor of Physics, Northern Illinois University (NIU), DeKalb, IL., teaching undergrad intro to quantum and relativity theory and graduate courses in medical imaging and radiation therapy physics.
2010- 2012 Adjunct professor, School of Medicine, Univ. of Texas, MD Anderson Cancer Center, Houston, TX
1990-2008 Assistant Professor, School of Medicine at Loma Linda University Medical Center, Loma Linda, CA
1990-2008 Director of Proton Accelerator Physics and Operations at Loma Linda University Medical Center, Loma Linda, CA.
1987-1997 Medical Physicist at Loma Linda University Medical Center, Loma Linda, CA.
1983-1987 Research Associate for Experiment E665 at Fermi National Accelerator Laboratory, Batavia, IL.
1980-1981 Research Assistant at Center for Nuclear Studies, Saclay, France
1977-1982 Graduate Student at State University of New York at Stony Brook, New York.

TEACHING EXPERIENCE

2008- present Professor , Northern Illinois University, DeKalb, IL, PHYS 634, 659,790, “ Physics of Radiation Therapy” (Spring 2011, 2013, 2015); Phys 531, “Medical Imaging, the Physics of CT and MRI” (Spring 2013,2015, and 2017); Phys 283/284 (Spring 2014 – Spring 2017), Phys 150,
2010-2014 Mentored 7 NIU graduate students for proton CT and radiotherapy research including 4 for M.S. degrees, Brad Kreydick (May 2013, NIU), Andrew Gearhart (Aug. 2013), Mahmoud Yaqoub (July 2013, Texas Tech Univ.), Viktoriya Zvoda (Aug. 2014, NIU)
2010-2014 PhD theses reviewer for 2 candidates from Univ. of Texas, MD Anderson

Cancer Center (2011 and 2012), 1 candidate from Univ. of Wollongong, (2015) Dept. of Medical Physics, Australia and 1 from Univ. of Adelaide (2017) Dept. of Medical Physics, Australia.

- 1997-2002 Instructor, “Accelerator Instruments and Beam Measurements,” U.S. Particle Accelerator School, Boston, MA, (1997).
Instructor, “Accelerator Physics for Proton Therapy,” U.S. Particle Accelerator School, Tucson, AZ, (2000).
Instructor, “Beam optics for proton therapy systems, U.S. Particle Accelerator School, Long, Beach, CA, (2002).
- 1994-2006 Instructor of Radiation Oncology classes on Radiation Physics and Microdosimetry, LLUMC (5 hours/year)
Instructor for Radiation Technology Therapists’ training classes, LLUMC, Brachytherapy with lab, (5 hours/year).
- 1990-1998 Instructor and co-developer for Eight-week High School Science Outreach Program at Loma Linda University Medical Center on “Application of Science in Medicine.”
- 1983-1986 Lecturer/Tour Guide, Fermilab High Energy Physics Program for Chicago high school students, Batavia, IL.
- 1983-1986 Research Advisor, Fermilab Undergraduate Summer Student Program, Batavia, IL.
- 1976-1977 Instructor/TA, Physics Laboratory, Undergraduate Physics Program, State University of New York at Stony Brook.

INVITED TALKS

- Nov. 2017 Regional meeting of AAPM in Oak Brook, IL., “Recent Advances in the Proton Computed Tomography Project”.
- Oct. 2016 8th INFIERI Workshop, Oct.17-21 2016, Fermilab, Batavia,IL., “3D Medical Imaging using Proton Computed Tomography.”
- July 2016 COFI Workshop sponsored by Northwestern University Summer School, July 11-20 2016, San Juan, Puerto Rico (2 invited talks on topics in Medical Physics)
- Nov. 2015 PASI Workshop (Proton Accelerators for Science and Innovation), Nov. 11-15 2015, Fermilab, Batavia,IL , “The proton CT Project”.
- Feb 2014 Development School of Radiation Safety in Medicine, Feb, 12-15, 2014, Baton Rouge, LA. “Accelerators for proton and light ion therapy”
- Aug 2013 ANS topical meeting, Bruges, Belgium, Conference on Applications of Accelerators in Nuclear Science, Aug. 5-8, 2013, “A new proton CT scanner for medical imaging.”
- May 2013 Carbon Ion Therapy Symposium, Mayo Clinic, Rochester, MN, May 1-2, “The NIU proton CT scanner for medical imaging”.
- Nov 2012 ANS Winter Meeting, San Diego, CA, “Proton and light ion accelerators For cancer therapy”

Aug 2012	Conference on Applications of Accelerators in Research and Industry, "Design and construction of the 1 st proton CT scanner for proton therapy"
June 2012	ANS annual meeting in Chicago, IL, "Overview of accelerator advances in particle therapy"
May 2011	Hadron Therapy Workshop, Eriche, Italy, May21-26, "The Proton CT Project."
May 2010	The 49 th Proton Therapy Co-Operative Group (PTCOG) meeting, Gunma, Japan, invited talk, "Synchrotrons for proton therapy- Theory of Operation."
April 2010	University of California at Riverside, Physics Dept., "Current Status of Charged Particle Therapy Worldwide."
April 2010	American Nuclear Society 2010 Joint Topical Meeting, Las Vegas, NV, April 2010, invited talk for plenary session, "Accelerators for Particle Therapy in Cancer Treatment-Past Present and Future."
April 2010	4 th Joint Symposium on Radiotherapy Research, Rice Univ., Houston, TX, "Dose Error Analysis for a Scanned Proton Beam."
June 2009	3 rd Joint Symposium on Radiotherapy Research, NIU, Naperville, IL, June 2009, plenary speaker, "The history of proton therapy-a physics perspective."
May 2008	3 rd Joint Symposium on Radiotherapy Research, NIU, Naperville, IL, June 2009, "Current Status of the Northern Illinois Proton Treatment and Research Center in West Chicago." The 46 th Proton Therapy Co-Operative Group (PTCOG) meeting, Jacksonville, FL, invited talk, " <i>Synchrotrons: theory and operation for cancer treatment.</i> "
Jan 2008	Professional Development School of the Health Physics Society, Oakland, CA. invited lecture series, " <i>Medical accelerators for radiation therapy.</i> "
Nov 2007	Physics colloquium speaker at Northern Illinois University, DeKalb, IL, "Current status of the Northern Illinois Proton Treatment and Research Facility."
Oct 2006	Physics colloquium speaker at Northern Illinois University, DeKalb, IL, "Heavy Charged Particle Radiotherapy."
Oct 2006	"Accelerates for Medical therapeutics," invited talk at the DOD sponsored symposium, "Developing and Understanding a Hospital Based Proton Therapy Facility." Palm Desert, CA, (Oct 18-20, 2006).
Aug 2006	"Calibration of a beam energy monitor in the Loma Linda proton therapy accelerator," 19 th Int'l conference on the Application of Accelerators in Research and Industry (CAARI), FT. Worth, TX, (Aug. 2006).
Dec 2005	"Proton therapy accelerators around the world," invited colloquium speaker, Fermi Nat'l Accelerator Laboratory, Batavia, IL.
June 2004	"Dosimetry Error Analysis for a Scanned Proton Beam Delivery System at

- LLUMC” PTCOG, Paris, France and University of Orsay.
- Oct. 2003 “A Solar Flare Simulation at LLUMC with a large (1m²) Target, San Francisco, CA., PTCOG.
- Aug. 2003 “Status of Proton Beam Scanning at LLUMC” Indiana University Cyclotron Facility, University of Indiana, Bloomington, IN.
- Nov. 2002 “Beam Optics for a Scanned Proton Beam at LLUMC” 17th Conference on Applications and Accelerators in Research and Industry, Denton, TX.
- Dec. 2001 “Proton therapy at Loma Linda- a 10 year history” invited colloquium speaker at University of Colorado Physics Dept., Boulder, CO
- Nov. 2001 “Beam Optics for a scanned Proton on Beam at LLUMC” Proton Therapy Co-Operative Group, Tsukuba, Japan
- Sept.2001 “Proton treatments at Loma Linda and around the world” invited colloquium speaker at Fermi National Accelerator Laboratory, Batavia, IL.
- Jan. 2001 Medicine Meets Virtual Reality 2001, Newport Beach, CA, (Annual Meeting of Dept. of Defense, TATRC).
“Current Scope of Research for Loma Linda Proton Beam”
- Nov. 2000 16th International Conference on the Application of Accelerators in Research an industry CAARI 2000, Denton, TX, *“Proton synchrotrons for Cancer Therapy.”*
- Sept. 2000 Heavy Charged Particles in Biology & Medicine 7th Workshop,
 Sept. 2000 Darmstadt, Germany, *“Clinical Results of Proton Therapy at LLUMC.”*
 Heavy Charged Particles in Biology & Medicine 7th Workshop, Invited
 Talk, Darmstadt, Germany, *“Microdosimetry Measurements of the Loma Linda Proton Beam.”*
- June 2000 Brookhaven National Laboratory, Upton, NY, *“Proton Therapy at Loma Linda; Status report after 10 years of Operation.”*
- June 2000 American Nuclear Society, San Diego, CA, *“Proton Synchrotrons for Cancer Therapy.”*
- May 2000 Proceedings of the 9th Annual Beam Instrumentation Workshop, Boston, MA, *“Spill Uniformity Measurements for a Raster Scan Proton Beam”*
- Nov. 1999 American Nuclear Society, Long Beach, CA *“Proton Synchrotrons for Cancer Therapy.”*
- April 1998 Proton Therapy Cooperative Group XXVIII, Rancho Mirage, CA
“Simulation of a solar flare event using a scanning proton beam at Loma Linda.”
- March 1997 Symposium of Medical Physics, at CINVESTAV, Mexico City, Invited talk, *“Overview of the Loma Linda University Medical Center Proton*

- Nov. 1996 *Therapy*” and “*Microdosimetry of the LLUMMC Proton Therapy Beam.*”
14th International Conference on Applications of Accelerators in Research
and Industry, Denton, TX. “*Spill Uniformity Measurement for a Raster
Scanned Proton Beam*” and “*Overview of the Loma Linda University
Medical Center Proton Therapy.*”
- April 1994 Meeting of the American Physical Society; Division of Particle Beams,
Washington, DC., “*Performance of the Loma Linda Proton Accelerator
and Facility.*”
- April 1994 Fifth Annual Space Radiation Health Investigator’s Workshop, Houston
TX. “*The Loma Linda Proton Facility and Radiobiology Studies*” and
“*Current Status of the Proton Therapy Facility at Loma Linda Medical
Center.*”
- May 1993 Brookhaven National Laboratory, Upton, NY. “*Current Status of the
Proton Therapy Facility at Loma Linda Medical Center.*”
- Oct. 1992 Particle Therapy Cooperative Group Meeting (PTCOG), Loma Linda, CA,
“*Recent Experience on the Loma Linda Gantry using Achromatic Beam
Optics.*”
- July 1992 TRIUMF, Vancouver, BC “*Current Status of the Proton Therapy Facility
at LLUMC.*”
- June 1992 Fermilab, Batavia, IL. “*Current Status of the Proton Therapy Facility at
Loma Linda Medical Center.*”
- March 1992 Particle Therapy Cooperative Group Meeting (PTCOG), Vancouver, BC.
“*Recent Developments at the Loma Linda Medical Accelerator.*”
- Nov. 1991 University of California, Riverside, Dept. of Physics. “*Current Status of
the Proton Therapy Facility at Loma Linda Proton Therapy Facility.*”
- July 1991 “*Quality Assurance for the Loma Linda Proton Therapy Facility.*”
American Association of Physicists in Medicine Annual Meeting, San
Francisco, CA.
- July 1990 American Association of Physicists in Medicine, St. Louis, MO. “*Design
of the Beam Delivery System for the Loma Linda Proton Therapy
Facility*” and “*Results from the prototype Beam Delivery System for the
Loma Linda Proton Therapy Facility.*”
- April 1986 Michigan State University, Physics Department. “*Deep Inelastic Muon
Scattering at Fermilab Using a Ring Imaging Cherenkov Detector.*”
- Oct. 1985 Nuclear Science Symposium (IEEE). “*Current Status of Ring Imaging
Cherenkov Detector Developments.*”
- May 1985 Fermilab, Research Techniques Seminar, Batavia, IL. “*Design of a Ring
Imaging Cherenkov Detector for Fermilab Experiment E665.*”
- May 1984 Fermilab, Research Techniques Seminar, Batavia, IL. “*Design of a Ring
Imaging Cherenkov Detector for Fermilab Experiment E665.*”
- Oct. 1981 Nuclear Science Symposium (IEEE). “*Identification of 200 GeV/c
Particles Using Ring Imaging Cherenkov Detector.*”

Feb. 1981 Center for Nuclear Studies, Saclay, France. “*Fermilab Experiment E605: Production of High Mass Do-Hadrons at Large Transverse Momentum in 400 GeV/c Proton-Proton Collisions.*”

RESEARCH AND EDUCATIONAL PUBLICATIONS

1. G. Dedes et. al., “Fluence Modulated Proton Computed Tomography”, *Phys Med Biol.* 2017 Jul 12;62(15):6026-6043.
2. C. Ordonez et. al., “ A real time image reconstruction system for particle treatment planning using proton computed tomography”, *Physics Procedia* 90 (2017) pg. 193-199. www.sciencedirect.com.
3. R. Johnson et.al., “Results from a prototype proton CT head scanner”,*Physics Procedia* 90 (2017) pg. 209-214. www.sciencedirect.com.
4. I.P. Almeida et. al., “ Evaluating Clinical Stopping Power Estimation from a Radiotherapy Dual Energy CT Scanner”, *Acta Physica Polonica B*, October 2017, Vol. 48, No. 10, pg.1619-1623.
5. Md. Naimuddin, G. Coutrakon, G. Blazey, S. Boi, A. Dyshkant, B. Erdelyi, D. Hedin, E. Johnson, J. Krider, and V. Rukalin, “Development of a proton Computed Tomography detector system,” *JINST* 11, C02012 (2016).
6. Dedes, Georgios; De Angelis, Ludovica; Rit, Simon; Hansen, David; Belka, Claus; Bashkirov, Vladimir ; Johnson, Robert; Coutrakon, George; Schubert, Keith; Schulte, Reinhard; Parodi, Katia; Landry, Guillaume, “Fluence modulated proton computed tomography”, *Phys Med Biol.* 2017 Jul 12;62(15):6026-6043
7. G. Coutrakon et al., “ Construction of a new proton CT Scanner”, *Proceedings of the 11th Int’l Topical Meeting on Nuclear Applications of Accelerators*, Bruges, Belgium, published online, <http://accapp13.org/full-papers>, see paper ID:THOLI08 (Nov. 2013)
8. N. Karonis, K. Duffin, C. Ordonez, B. Erdelyi, T. Uram, E.Olson, G. Coutrakon, M. Papka, “Distributed and Hardware Accelerated Computing for Clinical Medical Imaging using Proton Computed Tomography”, *Journal of Parallel and Distributed Computing*, 73(2013) pg. 1605-1612.
9. K. Duffin et. al., “An analysis of a distributed GPU implementation of proton computed tomographic reconstruction”, *Proceedings of the 2012 Super Computing Companion: high performance computing, networking storage and analysis*, pg.166-175, ISBN no. 978-0-7695-4956-9, Nov. 2012, Seattle,WA
10. G. Coutrakon et al., “Design and Construction of the 1st Proton CT Scanner,” *AIP Conference Proceedings* , No. 1525, *Application of Accelerators in Research and Industry*, Ft. Worth, TX, Aug. 2012. pg. 327-331.
11. G. Coutrakon, “ Proton and Light Ion Accelerators for Cancer Therapy,” *Transactions of the annual 2012 meeting of the American Nuclear Society*, vol. 106, Chicago, IL June 24-28, 2012
12. G. Coutrakon, et. al., “ High Performance multiple CPU/GPU proton computed tomography”, *Transactions of the annual 2012 meeting of the American Nuclear Society*, vol. 106, pg.70-72, Chicago, IL June 24-28, 2012

13. F. Hurley et al., "Water equivalent path length calibration of a prototype CT Scanner", *Medical Physics*, Vol. 39, No. 5, pg. 2416-2431, May 2012.
14. H.Sadrozinski et. al., "Detector Development for Proton Computed Tomography", *Proceedings of the 2011 IEEE Conference in Barcelona, Spain, Sept. 2011*.
15. G. Coutrakon, N. Wang, D. Miller, Y. Yang, "Dose error analysis for a scanned proton beam delivery system," *Physics in Medicine and Biology* 55 (2010), p. 7081-7096.
16. K. Wong, B. Erdelyi, R. Schulte, V. Bashkirov, G. Coutrakon, H. Sadrozinski, S. Penfold, A. Rosenfeld, "The Effects of tissue inhomogenetics on the accuracy of proton path reconstruction for proton computed tomography." *Proceedings of the 20th Int'l Conference on the Application of Accelerators in Research and Industry*, Ft. Worth, TX, pg. 476-489 (2009).
17. R.P Levy, E. Blakely, W. Chu, G. Coutrakon, E. Hug, G. Kraft, H. Tsujji, "The current status and future directions of heavy charged particle therapy in medicine." *Proceedings of the 20th Int'l Conference on the Applications of Accelerators in Research and Industry*, Ft. Worth, TX, pg. 410-424 (2009).
18. G. Coutrakon, "Medical Accelerators for Radiation Therapy," book chapter in *Topics in Accelerator Health Physics* published by Medical Physics Publishing (2008).
19. D.S. Gridley, G. Coutrakon, A. Rizvi, E. Bayeta, X. Luo-Owen, A.Y. Makinde, F. Baqai, P. Koss, J.M. Slater, M.J. Pecaut, "Low-Dose Photon Modify Liver Response in Mice to Simulated Solar Particle Event Protons." Vol. 22, pg. 159-170 (2008).
20. D.S. Gridley, A. Rizvi, X. Luo-Owen, A. Makinde, G. Coutrakon, P. Koss, J.M. Slater, M. Pecaut, "Vatable Hematopoietic Responses to Acute Photons, Protons and Simulated Solar Particle Event Protons." *In Vivo* 22: pg. 159-170 (2008).
21. Coutrakon G., "Accelerators for heavy charged particle radiation therapy," *Technology in Cancer Research and Treatment*, Vol. 6 Issue 4 Supplement, ISSN 15333-0346, pg. 49-52 (2007).
22. Moyers M.F., Benton E.R., Chebremedhin A., Coutrakon G., "Leakage and scatter radiation from a double scattering based proton beam line." *Medical Physics*, Vol. 34 (12), December 2007.
23. Moyers M.F., Coutrakon G.B., Ghebremedhin A., Shahnazi K., Koss P., Sander E., "Calibration of a proton beam energy monitor." *Medical Physics*, Vol. 34 (6), pg. 1952-1966, June 2007.
24. G. Coutrakon et al., "Simulation of a 36 hour solar particle event at LLUMC using a proton beam scanning system," *Proceedings of the 19th Int'l Conference on the Applications of Accelerators in Research and Industry*, Ft. Worth, TX, pg. 791-794. Also see *Nuclear Instruments and Methods in Physics Research, Section B*, Vol. 261, issues 12 (2006).
25. G. Coutrakon, J. Hubbard, E. Sander, "Beam Optics of the 2MeV Proton Injection Line at the LLUMC Proton Accelerator," *Nuclear Instruments and Methods in Physics Research, Section B*. Vol. 241, Issues 1-4, pg. 697-701 (2005).
26. G. Coutrakon, J. Hubbard, E. Sanders, "Emittance Measurements from the LLUMC Proton Accelerator," *Nuclear Instruments and Methods in Physics, Section B*. vol. 241, Issues 1-4, pg. 702-707 (2005).

27. R. Cirio, E. Garelli, R. Shulte, S. Amerio, A. Boriani, F. Bourhaleb, G. Coutrakon, M. Donetti, S. Giordanengo, P. Koss, E. Madon, F. Marchetto, U. Nastai, C. Peroni, D. Santuari, A. Sardo, G. Sceilzo, M. Stasi, and E. Trevisol. Two-Dimensional and quasithree-dimensional dosimetry of hadron and photon beams with the Magic Cube and the Pixel Ionization Chamber, *Physics in Medicine and Biology*, Vol. 49, pg. 3713-3724 (2004).
28. G.H. Gillespie, O.V. Voronkova, G.B. Coutrakon, J.A. Hubbard, E. Sanders, "Using the PBO LAB™ Optimization and Transport Modules to gain an improved understanding of the LLUMC proton therapy beam lines," *Proceedings of the 2004 European Particle Accelerator Conference*, Lucerne, Switzerland, pg. 2188-2190 (2004).
29. G. Coutrakon, J. Hubbard, P. Koss, E. Sanders, M. Panchal, "Beam Optics for a Scanned Proton Beam at Loma Linda University Medical Center," *Proceedings of the 17th Int'l Conference on Applications of Accelerators in Research and Industry*, Denton TX, pg. 1116-1120, AIP Conf. Proc. 680, (2003).
30. G.B. Coutrakon, "Proton Synchrotrons for Cancer Therapy." *Proceedings of the 16th Int'l Conference on Applications of Accelerators in Research and Industry*, Denton TX, pg. 861-864, AIP Conf. Proc. 576, (2001).
31. G.B. Coutrakon, A. Ghebremedhin, "Requirements for the Loma Linda Proton Therapy Accelerator," *Proceedings of the 15th Int'l Conference on Application of Accelerators in Research and Industry*, Denton, TX, pg. 975-977, AIP Conf. Proc. 475, (1999).
32. G.B. Coutrakon, J.M. Slater, A. Ghebremeshin, "Design Considerations for Proton Medical Accelerators", *Proceedings of the 1999 Particle Accelerator Conference*, New York, NY, Vol. 1, pg. 11-15 NY, NY, (1999).
33. G. Coutrakon, J. Cortese, A. Ghebremedhin, J. Hubbard, J. Johanning, P. Koss, G. Maudsley, R. Slater, and C. Zuccarelli, "Microdosimetry spectra of the Loma Linda proton beam and relative biological effectiveness comparisons," *Med. Phy.* Vol. 24 (9), pg. 1499-1506, (1997).
34. G. Coutrakon, A. Ghebremedhin, G. Jenkins, J. Johanning, P. Koss, "Spill uniformity measurements for a raster scanned proton beam." *Proceedings of the 14th Int'l conference on Application of Accelerators in Research and Industry*, Denton, TX, pg. 1265-1268, AIP Conf. Proc. 392, (1997).
35. J.B. Robertson, J.M. Eaddy, J.O. Archambeau, G.B. Coutrakon, D.W. Miller, M.F. Moyers, J.V. Siebers, J.M. Slater, and J.F. Dicello, "Relative Biological Effectiveness and Microdosimetry of a Mixed Energy Field of Protons up to 200 MeV" *Advances in Space Research*, 14 (10), pg. 271-275, (1994).
36. J. Archambeau, et al. "Proton Beam Irradiation for the Cancer Patient: An Approach to Optimal Therapy and Normal-Tissue Sparing" *Advances in Radiation Biology*, Vol. 18, pg. 53-89, (1994).
37. G. Coutrakon, J. Hubbard, J. Johanning, G. Maudsley, T. Slater, P. Morton, "A performance study of the Loma Linda Proton Medical Accelerator," *Medical Physics*, Vol. 21 (11), pg. 1691-1701, Nov. (1994).
38. J.B. Robertson, J.M. Eaddy, J.O. Archambeau, G.B. Coutrakon, D.W. Miller, M.F. Moyers, J.V. Siebers, J.M. Slater, and J.F. Dicello, "Variation of measured proton relative biological effectiveness (RBE) as a function of initial proton energy." *Hadron*

- Therapy in Cuomo, Italy*, pg. 706-711. 1993. Elsevier Science B.V., P.O. Box 211, 1000 AE Amsterdam, Netherlands.
39. D.W. Miller, J.V. Siebers, M.F. Moyers, G.B. Coutrakon, M. Sardesai, L. Chan, S. Sun, "Commissioning and operation of the Loma Linda Proton Therapy Facility," *Medical Physics* 19(3): 829, 1992.
 40. G. Coutrakon et al. "A prototype beam delivery system for the proton medical accelerator at Loma Linda." *Medical Physics*, 18(6): 1093, Nov./Dec. (1991).
 41. G. Coutrakon et al. "A beam intensity monitor for the Loma Linda cancer therapy proton accelerator." *Medical Physics*, 18(4): 817, July/Aug. (1991).
 42. J.F. Dicello, M. Divadeenam, M. Wasiolek, J.O. Archambeau, J.M. Slater, D.W. Miller, M.H. Archambeau, G.B. Coutrakon, M.F. Moyers, J.V. Siebers, P.E. Young, and J.B. Robertson, "Quality Assurance for the Loma Linda Proton Therapy Facility," *Medical Physics* 18(3): 624, 1991.
 43. G. Coutrakon, et al. "The ring imaging Cherenkov detector for Fermilab Experiment 665." *Transaction of the 1985 Nuclear Science and Engineering Symposium (IEEE)*.
 44. Y.B. Hsiung et al. "A-dependence of the inclusive production of Hadrons with high transverse momenta." *Phys. Rev, Letters*, 55, 457 (1985).
 45. G. Coutrakon, et al. "Ring imaging Cherenkov detector prototype results for E-665 at Fermilab." *Transactions of the 1985 Nuclear Science and Engineering Symposium (IEEE)*.
 46. G. Coutrakon, "Current state of ring imaging chernkov detectors." *Transactions of the 1983 Nuclear Science and Engineering Sympoium at San Francisco (IEEE)*.
 47. P. Mangeot, et al. "Progress in Cherenkov ring imagiing part II." *Nuclear Instr. And Meth.* 216, 403, (1983).
 48. M. Adams, et al. "Pion, Kaon, and Proton Identification with a large aperture ring imaging Cherenkov counter." *Nuclear Instrm. And Meth.* 217, 237, (1983).
 49. R. Bouclier, et al. "Progress in Cherenkov ring imaging detectors, part I." *Nuclear Instr. And Meth.* 205, 403, (1983).
 50. G. Coutrakon, et al. "Identification of 200 GeV/c particles using a ring imaging chernkov Detector." *Transactions of the 1981 Nuclear Science and Engineering Symposium, San Francisco, CA (IEEE)*.
 51. T. Yamanouchi, et al. "Upper limits on phi-phi production in 350 GeV/c proton-beryllium collisions." *Phys. Rev. D* 23, 1514, (1981).
 52. J. Hubbard, et al. "Multi-step avalanche chambers for FNAL experiment E-605." *Nucl. Instr. And Meth.* 176, 233, (1980).

CLINICAL EXPERIENCE AND EDUCATION

1. Commissioning of 70 MeV proton eye beam delivery system at Loma Linda University Medical Center (LLUMC, 1990).
2. Quality assurance of photon beams electron beams, and brachy therapy dosimetry at LLUMC and Sun City, CA (1990-1998).
3. Completion of "Radiological Physics" course at MD Anderson Medical Center (MDAMC, 1994).

4. Completion of “External Beam Dosimetry” course at MDAMC (1996).
5. Completion of “Anatomy for Radio Therapy Treatment Planning,” Univ. of Texas Health Science Center at San Antonio, TX (1996).
6. Completion of Part 1 & Part 2 Board Exams in Medical Physics (American Board of Medical Physics, July 1994 and July 1996).

Committees, conference chair, and NIH consulting

1. Thesis committee chair for Brad Kredick’s master’s thesis (Feb. 2013)
2. Thesis committee chair for Andrew Gearhart master’s thesis (May 2013)
3. Thesis committee chair for Viktoria Zvoda master’s thesis (June 2014)
4. Merit Committee member for Physics department faculty evaluations (Feb-Mar 2015, Feb-Mar 2017)
5. Member of organizing committee for the ANS topical meeting in Bruges, Belgium (medical applications sessions), Aug 5-8, 2013
6. NIH reviewer for P41 grant at Columbia University’s RARAF (Radiological research accelerator facility) for radiation biology. March 6-8, 2013, Westchester, NY and 2nd review Feb 26, 2014
7. Session chair for medical applications of accelerators at ANS annual meeting, Chicago, IL, June 2012.
8. Organizing Committee for the Life Science Section of the Accelerator Applications in Nuclear Science in Bruges, Belgium. Aug. 2013.
9. Session Chair and organizer for “Recent Advances in Particle Therapy Accelerators,” CAARI meetings, Ft. Worth, TX, Nov. 2016, May 2014, Aug. 2012, Aug. 2010 and Aug. 2008. (Conference on Applications of Accelerators in Research and Industry).
10. Session Chair and organizer for “Particle Therapy Facilities under Construction.” American Nuclear Society Radiation Protection and Shielding Division 2010 Topical meeting, Las Vegas, NV, April 2010.
11. Conference organizer for 4th Joint Symposium on Proton Therapy Research.” Rice University, Houston, TX, April 2010.
12. Conference organizer for 3rd Joint Symposium on Proton Therapy Research.” NIU, Naperville, IL, June 2009.
13. AAPM Task Group 183, “Nomenclature, specifications, safety requirements, and acceptance procedures for proton radiation therapy systems.”
14. NIH reviewer of P41 grant during site visits to Columbia University’s RARAF (Radiological Research Accelerator Facility) March 2004, March 2009, March 2013.

CONSULTING FOR DESIGN, CONSTRUCTION AND MAINTENANCE OF PROTON THERAPY FACILITIES

1. John Hopkins Medical Center, Jan. 6, 2014, discussions on specifications of proton therapy equipment for Sibley Hospital, Washington D.C.

2. Sumitomo Heavy Industries, Matsumoto City, Japan, evaluation of Sumitomo's treatment room control system for FDA clearance in the U.S. (Aug. 2013)
3. John Hopkins Medical Center, Testimony for Certificate of Need (CON) for John Hopkins' Sibley Hospital held in Washington D.C. (Jan. 8, 2013)
4. John Hopkins Medical Center, evaluation of proton therapy vendor for proton therapy, (March-May 2011) and testimony for JHMC to build proton center at Sibley Hospital. Prepared statement and expert witness for the Washington D.C. Health Facilities Board (Jan 2013).
5. Mary Bird Perkins Cancer Center, evaluation of proton therapy vendors for proton therapy, (Oct. 2011-March 2012).
6. The Scripps Proton Therapy Center, San Diego, CA, (Jan 2010).
7. The Proton Therapy Institute of New York City, NY, (2010).
8. The Northern Illinois Proton Treatment and Research Center, NIU, DeKalb, IL, (2006-2008).
9. Trento Proton Therapy Center, Trento, Italy, (2005 - 2006).
10. Midwest Proton Radiological Institute (MPRI), Bloomington, IN, (2003 & 2007).
11. Massachusetts General hospital, Boston, MA, Technical Design Review, (1994).

Professional Activity 2016

1. Invited speaker and faculty member of Northwestern Univ. sponsored summer school in San Juan, Puerto Rico, July 11-20, 2016
2. Attended proton CT collaboration meeting at Loma Linda Univ. Med. Ctr. and presented "Proton range verification results from measurements using film dosimetry". Aug.8-10,2016.
3. Worked on 4 weekend experiments for proton CT using 250 MeV beam at CPC with successful and published results of imaging pediatric head phantom.
4. Hosted a visiting speaker, Robert Johnson, for NIU Physics Colloquium Speaker, April 22,2016.
5. Organizing committee member and session chair for 24th Int'l Conference on Applications of Accelerators in Research and Industry, Ft. Worth, TX, Oct. 31-Nov.4, 2016.
6. Invited speaker to INFIERI Workshop, Oct. 17-21, Fermilab, Batavia, IL.
7. Organized Phys 284 lab and added equipment for maximum number of students (16) to allow 8 experimental stations to be simultaneously in use for most of the course. Added error analysis documentation. Added more documentation for h/e lab and spectrometer lab.
8. Attended RSNA annual meeting Nov.28 in Chicago,IL and regional APS prairie meeting, Oct. 7-8, DeKalb,IL.

