

George Winthrop Sherouse, PhD, FAAPM

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Education

Doctor of Philosophy in Biomedical Engineering
University of North Carolina, Chapel Hill, December 1992, Dissertation title: "CT-based Design and Delivery of Radiation Therapy"

Master of Science in Nuclear Engineering Sciences (Medical Physics track)
University of Florida, Gainesville, March 1981, Thesis title: "The MASTERSCAN System: A Microcomputer-based Controller for Radiation Therapy Beam Scanning Devices"

Bachelor of Science in Physics
University of Florida, Gainesville, June 1977, Minors: Computer Science and Philosophy

Certification

American Board of Radiology in Therapeutic Radiologic Physics, 1991

Licenses and registrations

New York State, Therapeutic Radiological Physics, License number 377

Employment History

Senior Medical Physicist
Physics and Clinical Productivity (P&CP), Charlotte, NC, December 2011 – present
Part of Global Physics Solutions, a Landauer company

Sole Proprietor
Sherouse-on-Hudson Medical Physics, Charlotte, NY, December 2011 – present
Sherouse-on-Hudson Medical Physics, New Paltz, NY, February 2010 – November 2011

Clinical clients have included

- South Nassau Communities Hospital, Oceanside, NY (data collection and Pinnacle commissioning for Novalis TX)
- Center for Cancer Care, Torrington, CT (data collection and Pinnacle commissioning for Elekta Infinity)

Senior Medical Physicist and Director of Medical Physics Residency Training
Department of Radiation Oncology, Vassar Brothers Medical Center, Poughkeepsie, NY and Ulster Radiation Oncology Center, Kingston, NY, February 2010 – November 2011

Chief Medical Physicist and President
Sherouse Systems, Inc., 1987 – February 2010. Full time April 1998 – February 2010.

Provide clinical medical physics support to radiotherapy clinics, contract computing and consultation services to equipment vendors and end-users.

Clinical clients have included

- Medical University of South Carolina
- Pulaski (Virginia) Community Hospital
- Richmond (Virginia) Radiation Oncology

- St. Mary's Hospital (Richmond, VA)
 - East Carolina University
 - Danville (Virginia) Regional Medical Center
 - OakWood Radiation Oncology (Mechanicsburg, PA)
 - Memorial Hospital of Martinsville (Virginia)
 - Virginia Baptist Hospital / Pearson Regional Cancer Center (Lynchburg, VA)
- as well as cross-coverage with Physics and Computer Planning, Inc., Charlotte, NC and Carolina Medical Physics, Inc., Greenville, NC.

Industrial clients have included

- Beekley Corporation
- Varian Medical Systems
- Accuray
- .decimal
- International Brachytherapy (IBt)
- Mitsubishi of Japan
- IZI Medical

Associate Professor and Director of Developmental Physics

Department of Radiation Oncology, Medical University of South Carolina, Charleston, South Carolina, November 1994 - April 1998. Acting Chief of Physics February 1997 through June 1997.

Established a 3D treatment planning service. Provided administrative, teaching and clinical physics support and continued research and development related to computerized 3D treatment planning.

Adjunct Assistant Professor

Department of Biomedical Engineering, Clemson University, Clemson, South Carolina, 1996-1998.

Visiting Professor

Department of Radiotherapy and Nuclear Medicine, University of Gent, Gent, Belgium, October 1994 - November 1994.

Assistant Professor and Director of 3D Treatment Planning and Development

Department of Radiation Oncology, Duke University Medical Center, Durham, North Carolina, April 1991 - September 1994.

Established a 3D treatment planning service. Shared clinical physics duties with other faculty members. Continued research and development related to computerized 3D treatment planning.

Associate Physicist (Clinical Assistant Professor) and Director of Computing Services

Department of Radiation Oncology, North Carolina Memorial Hospital, University of North Carolina, Chapel Hill, November 1983 - April 1991.

Developed the GRATIS™ 3D treatment planning system and managed its clinical implementation. Designed and implemented the first practical system for 3D image-based virtual treatment simulation.

Physicist/Programmer

Software Products, Atomic Energy of Canada, Ltd., Ottawa, Ontario, Canada, March 1982 - November 1983.

Developed and supported commercial treatment planning software, providing a clinical medical physicist's perspective to the development effort.

Assistant-in-Radiology

Division of Radiation Therapy, Shands Teaching Hospital, University of Florida, Gainesville, June 1978 - February 1982.

One of 3 to 4 clinical medical physicists sharing rotating responsibility for treatment planning, block cutting, patient setup, and clinical QA. Primary responsibility for treatment planning system maintenance.

Teaching Experience

August 2001 – May 2002

Sole responsibility for Introduction to Radiological Physics course and shared responsibility for other graduate Medical Physics course at East Carolina University.

May 1999 - December 2000

Provide monthly radiation safety inservice to employees of Pulaski (Virginia) Community Hospital.

November 1994 - April 1998

Shared in teaching of physics courses to radiation therapist students and radiation oncology residents at MUSC. Sole responsibility for resident physics course in the 1997-98 academic year, including revised curriculum and change of didactic model.

April 1991 - September 1994

Shared in teaching of physics courses to medical students and radiation oncology residents at Duke.

November 1983 - April 1991

Assisted in the teaching of Radiation Therapy residents, Radiation Therapy Technology students, and School of Public Health graduate students at UNC. Responsibilities included lectures and supervision of student lab exercises.

September 1977 - June 1978

Teaching Assistant in the Department of Physics and Astronomy at the University of Florida, responsible for supervision of undergraduate lab exercises.

Significant Contributions

Architect and principal author of GRATIS™, the only freely available, portable 3D radiotherapy treatment design system. GRATIS™ introduced, to some ridicule, the now industry-standard idea of using personal workstations, modern structured programming languages and software engineering techniques, and industry-standard Graphical User Interface elements to develop radiation treatment planning systems. GRATIS™ was the first radiotherapy planning system to use a mouse and direct manipulation of on-screen graphics.

Creator of the Virtual Simulator™, the first practical software tool for direct use of tomographic images in the computer-aided design of 3D teletherapy beam geometries. Performed the first rigorous evaluation of techniques for computing Digitally Reconstructed Radiographs from CT and demonstrated that DRR images could be of adequate quality to replace conventional simulation films.

Conceptualized and managed the development of a practical clinical system for CT-based treatment design and delivery. Coined and popularized the term “virtual simulation”.

Instrumental in the introduction of Adaptive Histogram Equalization (AHE) into the radiotherapy community. This technique is now an accepted standard for the digital enhancement of radiotherapy portal images, particularly those acquired from electronic portal imagers.

With collaborators at Duke University Medical Center developed some of the first rationale and techniques for incorporating functional imaging directly into computerized treatment design.

Founder of the MEDPHYS Internet mailing list, now a significant international resource for communication between medical physicists.

Funded Research

March 1989 - April 1991

Co-PI of contract to develop software tools for radiotherapy, NCI contract number N01-CM97566

May 1993 - April 1996

Investigator on grant to study heat and radiation effects in tumor microcirculation, NIH grant number 2R01CA40355-09

Articles in Refereed Publications

1. E. Chaney, H. Fuchs, S. Pizer, J. Rosenman, **G.W. Sherouse**, E. Staab, M. Varia, "A Three-Dimensional Imaging System for Radiotherapy Treatment Planning," Proceedings of the XIV International Conference on Medical and Biomedical Engineering and the VII International Conference on Medical Physics, *Med and Biomed Engin Comput*, **23**:951-952, 1985.
2. S. Pizer, H. Fuchs, C. Mosher, L. Lifshitz, G. Abram, S. Ramanathan, B. Whitney, J. Rosenman, E. Staab, E. Chaney, **G.W. Sherouse**, "3D Shaded Graphics in Radiotherapy and Diagnostic Imaging," *Proc. Computer Graphics '86*, 1986.
3. E. Chaney, J. Rosenman, **G.W. Sherouse**, D. Bourland, S. Pizer, H. Fuchs, E. Staab, M. Varia, S. Mahaley, "Three Dimensional Display of Brain and Prostate Implants," *Endocurietherapy/Hyperthermia Oncology*, **2**:93-99, 1986.
4. **G.W. Sherouse**, J. Naves, M. Varia, J. Rosenman, "A Spreadsheet Program for Brachytherapy Planning," *Int J Radiat Onc Biol Phys*, **13**:639-646, 1987.
5. **G.W. Sherouse**, J. Rosenman, H. McMurry, S. Pizer, E. Chaney, "Automatic Digital Contrast Enhancement of Radiotherapy Films," *Int J Radiat Onc Biol Phys*, **13**:801-806, 1987, winner of SEAAPM Annual Chapter Award.
6. C. Mosher, **G.W. Sherouse**, P. Mills, K. Novins, S. Pizer, J. Rosenman, E. Chaney, "The Virtual Simulator," *Proc. 1986 Workshop on Interactive 3D Graphics, UNC, ACM, New York*, 37-42, 1987.
7. C. Mosher, **G.W. Sherouse**, E. Chaney, J. Rosenman, "3D Displays and User Interface Design for a Radiation Therapy Treatment Planning CAD Tool," *Proceedings of 1987 SPIE*, **902**:64-71, 1988.
8. J. Rosenman, **G.W. Sherouse**, H. Fuchs, S. Pizer, A. Skinner, C. Mosher, K. Novins, J. Tepper, "Three-dimensional Display Techniques in Radiation Therapy Treatment Planning," *Int J Radiat Onc Biol Phys*, **16**:263-269, 1989.
9. **G.W. Sherouse**, K. Novins, E.L. Chaney, "Computation of Digitally Reconstructed Radiographs for Use in Radiotherapy Treatment Design," *Int J Radiat Onc Biol Phys*, **18**:651-658, 1990.
10. S.L. Sailer, J.D. Bourland, J.G. Rosenman, **G.W. Sherouse**, E.L. Chaney, J.E. Tepper, "3-D Beams Need 3-D Names," *Int J Radiat Onc Biol Phys*, **19**:797-798, 1990.
11. **G.W. Sherouse**, J.D. Bourland, K.L. Reynolds, H.L. McMurry, T.P. Mitchell, E.L. Chaney, "Virtual Simulation in the Clinical Setting: Some Practical Considerations," *Int J Radiat Onc Biol Phys*, **19**:1059-1065, 1990.
12. M. Levoy, H. Fuchs, S.M. Pizer, J. Rosenman, E.L. Chaney, **G.W. Sherouse**, V. Interrante, J. Kiel, "Volume Rendering in Radiation Treatment Planning," *Proc. First Conference on Visualization in Biomedical Computing*, Atlanta, March, 1990.
13. J. Rosenman, S.L. Sailer, **G.W. Sherouse**, E.L. Chaney, J.E. Tepper, "Virtual Simulation: Initial Clinical Results," *Int J Radiat Onc Biol Phys*, **20**:843-851, 1991.
14. **G.W. Sherouse**, E.L. Chaney, "The Portable Virtual Simulator," *Int J Radiat Onc Biol Phys*, **21**:475-482,

1991.

15. S.L. Sailer, **G.W. Sherouse**, E.L. Chaney, J.G. Rosenman, J.E. Tepper, "A Comparison of Postoperative Techniques for Carcinomas of the Larynx and Hypopharynx Using 3-D Dose Distributions," *Int J Radiat Onc Biol Phys*, **21**:767-777, 1991.
16. J.G. Rosenman, E.L. Chaney, S.L. Sailer, **G.W. Sherouse**, J.E. Tepper, "Recent Advances in Radiotherapy Treatment Planning," *Cancer Investigation*, **9**:465-81, 1991.
17. **G.W. Sherouse**, "Coordinate Transformation as a Primary Representation of Radiotherapy Beam Geometry," *Med Phys*, **19**:175-179, 1992.
18. L.B. Marks, D.P. Spencer, G.C. Bentel, S.K. Ray, **G.W. Sherouse**, M.R. Sontag, R.E. Coleman, R.J. Jaszczak, T.G. Turkington, V. Tapson, L.R. Prosnitz, "The Utility of SPECT Lung Perfusion Scans in Minimizing and Assessing the Physiologic Consequences of Thoracic Irradiation," *Int J Radiat Onc Biol Phys*, **26**:659-668, 1993.
19. **G.W. Sherouse**, "A Mathematical Basis for Selection of Wedge Angle and Orientation," *Med Phys*, **20**:1211-1218, 1993.
20. L.B. Marks, G. Bentel, **G.W. Sherouse**, D.P. Spencer, K. Light, "Craniospinal Irradiation for Trilateral Retinoblastoma Following Ocular Irradiation," *Medical Dosimetry*, **18**:125-128, 1993.
21. L.B. Marks, M.E. Hebert, G.C. Bentel, D.P. Spencer, **G.W. Sherouse**, L.R. Prosnitz, "To Treat or Not to Treat the Internal Mammary Nodes: A Possible Compromise," *Int J Radiat Onc Biol Phys*, **29**:903-909, 1994.
22. M.S. Anscher, T. Murase, D.M. Prescott, L.B. Marks, H. Reisenbichler, G.C. Bentel, D.P. Spencer, **G.W. Sherouse**, R.L. Jirtle, "Changes in Plasma TGF- β Levels During Pulmonary Radiotherapy as a Predictor of the Risk of Developing Radiation Pneumonitis," *Int J Radiat Onc Biol Phys*, **30**:671-676, 1994.
23. J. Jacky, I. Kalet, J. Chen, J. Coggins, S. Cousins, R. Drzymala, W. Harms, M. Kahn, S. Kromhout-Schiro, **G.W. Sherouse**, G. Tracton, J. Unger, M. Weinhaus, D. Yan, "Portable Software Tools for 3-D Radiation Therapy Planning," *Int J Radiat Onc Biol Phys*, **30**:921-928, 1994.
24. G.C. Bentel, L.B. Marks, **G.W. Sherouse**, D.P. Spencer, M.S. Anscher, "The Effectiveness of Immobilization During Prostate Irradiation," *Int J Radiat Onc Biol Phys*, **31**:143-148, 1995.
25. G.C. Bentel, L.B. Marks, **G.W. Sherouse**, D.P. Spencer, "A Customized Head and Neck Support System," *Int J Radiat Onc Biol Phys*, **32**:245-248, 1995.
26. L.B. Marks, **G.W. Sherouse**, D.P. Spencer, G. Bentel, R. Clough, K. Vann, R. Jaszczak, E. Coleman, "The Role of 3-Dimensional Functional Lung Imaging in Radiation Treatment Planning: The Functional DVH," *Int J Radiat Onc Biol Phys*, **33**:65-75, 1995.
27. L.B. Marks, **G.W. Sherouse**, S. Das, G. Bentel, D. Spencer, D. Turner, "Conformal Radiation Therapy With Fixed Shaped Coplanar or Noncoplanar Radiation Beam Bouquets: A Possible Alternative to Radiosurgery," *Int J Radiat Onc Biol Phys*, **33**:1209-1219, 1995.
28. L.B. Marks, M.T. Munley, D.P. Spencer, **G.W. Sherouse**, G.C. Bentel, J. Hoppenworth, M. Chew, R.J. Jaszczak, R.E. Coleman, L.R. Prosnitz, "Quantification of Radiation-Induced Regional Lung Injury With Perfusion Imaging," *Int J Radiat Onc Biol Phys*, **38**:399-409, 1997.
29. L.B. Marks, **G.W. Sherouse**, M.T. Munley, G.C. Bentel, D.P. Spencer, "Incorporation of Functional Status Into Dose-Volume Analysis," *Med Phys*, **26**:196-199, 1999.
30. G. Starkschall, **G.W. Sherouse**, W.R. Hendee, Point/Counterpoint, speaking against the proposition that

"The Future Will Not Need Clinical Therapy Physicists," *Med Phys*, **28**:865-7, 2001.

31. **G.W. Sherouse**, "In regard to Intensity-Modulated Radiotherapy Collaborative Working Group, IJROBP 2001," *Int J Radiat Oncol Biol Phys*, **53**:1088-9 2002.
32. C. F. Serago, N. Adnani, M. I. Bank, J. A. BenComo, J. Duan, L. Fairbent, D. J. Freedman, P. H. Halvorsen, W. R. Hendee, M. G. Herman, R. K. Morse, H. W. Mower, D. E. Pfeiffer, W. J. Root, **G. W. Sherouse**, M. K. Vossler, R. E. Wallace, B. Walters, "Code of Ethics for the American Association of Physicists in Medicine: report of Task Group 109," *Med Phys*, **36**:213-23, 2009.
33. S. Dieterich and **G.W. Sherouse**, "Experimental comparison of seven commercial dosimetry diodes for measurement of stereotactic radiosurgery cone factors," *Med Phys*, **38(7)**:4166-4173, 2011.

Articles in Other Publications

1. **G.W. Sherouse**, D. Bourland, E. Chaney, J. Naves, J. Rosenman, M. Varia, "Evaluation of Image Transformation Software and Ink Jet Printer for Output of CT-Based Treatment Plans," *J Am Assoc Med Dosim*, vol. XI, no. 1:31-36, March 1986
2. **G.W. Sherouse**, C. Mosher, "User Interface Issues in Radiotherapy CAD Software," *Proc. 9th ICCR*, 429-432, 1987.
3. **G.W. Sherouse**, C. Mosher, K. Novins, J. Rosenman, E. Chaney, "Virtual Simulation: Concept and Implementation," *Proc. 9th ICCR*, 433-436, 1987.
4. J. Coggins, **G.W. Sherouse**, S. Hummel, J. Jacky, R. Drzymala, M. Weinhaus, "Standards and Practices of the Collaborative Working Group on Radiation Treatment Planning Tools," Technical Report 90-2 of the Collaborative Working Group on Radiation Treatment Planning Tools, National Cancer Institute, 1990.
5. J.G. Rosenman, E.L. Chaney, S.L. Sailer, **G.W. Sherouse**, J.E. Tepper, "Recent Advances in Radiotherapy Treatment Planning," *Cancer Invest*, **9**:465-481, 1991.
6. J. Jacky, M. Weinhaus, J. Coggins, R. Drzymala, W. Harms, S. Kromhout-Schiro, **G.W. Sherouse**, G. Tracton, J. Unger, "Foundation Library Specification and Virtual Machine Platform (VMP) Specification," Technical Report 91-1 of the Collaborative Working Group on Radiation Treatment Planning Tools, National Cancer Institute, 1991.
7. S.L. Sailer, E.L. Chaney, J.G. Rosenman, **G.W. Sherouse**, J.E. Tepper, "Treatment Planning at the University of North Carolina," *Seminars in Radiation Oncology*, **2**:1-7 1992.
8. **G.W. Sherouse**, "Is the Inverse Problem a Red Herring?," *Proc. 11th ICCR*, 66-67, 1994.
9. **G.W. Sherouse**, "Dose Homogenization Using Vector Analysis of Dose Gradients," *Proc. 11th ICCR*, 248-249, 1994.

Book Chapters

1. **G.W. Sherouse**, "Radiation Therapy Workstations" in *Proc. 1987 AAPM Summer School*, 1987.
2. **G.W. Sherouse**, "Computer Languages" in *Computers in Medical Physics*, proceedings of 1989 AAPM Summer School, American Institute of Physics, 92-111, 1990.
3. **G.W. Sherouse**, "Communications and Networks" in *Computers in Medical Physics*, proceedings of 1989 AAPM Summer School, American Institute of Physics, 122-139, 1990.
4. **G.W. Sherouse**, "Images and Treatment Simulation" in *Advances in Radiation Oncology Physics*:

Dosimetry, Treatment Planning and Brachytherapy, proceedings of 1990 AAPM Summer School, American Institute of Physics, 925-947, 1992.

5. **G.W. Sherouse**, "The Reality of Virtual Simulation" in *Proceedings of First International 3D Radiation Treatment Planning and Conformal Therapy Symposium*, Medical Physics Publishing, Inc.
6. **G.W. Sherouse**, "Radiotherapy Simulation" in *Teletherapy: Present and Future*, proceedings of 1996 AAPM Summer School, Advanced Medical Publishing, 85-102, 1996.
7. **G.W. Sherouse**, "Radiotherapy Simulation" in "Treatment Planning in Radiation Oncology," edited by Faiz M. Khan and Roger A. Potish, Williams and Wilkins, 39-53, 1997.

Published Scientific Abstracts

1. **G.W. Sherouse**, F. Bova, L. Fitzgerald, "The MASTERSCAN System: A Microcomputer-based Controller for Radiation Therapy Beam Scanning Devices," *Med Physics*, **8**:587, 1981.
2. E. Chaney, H. Fuchs, S. Pizer, J. Rosenman, **G.W. Sherouse**, E. Staab, M. Varia, "A Three Dimensional Imaging System for Radiotherapy Treatment Planning," *Med Bio Engin & Comput*, **23**, sup. part 2:951, 1985.
3. **G.W. Sherouse**, J. Naves, M. Varia, "A Spreadsheet Program for Brachytherapy Planning," *Med Physics*, **12**:528, 1985.
4. D. Bourland, E. Chaney, H. Fuchs, S. Mahaley, J. Naves, S. Pizer, J. Rosenman, **G.W. Sherouse**, E. Staab, M. Varia, R. Whaley, "Planning Stereotactic ¹²⁵I Implants of the Brain Using Interactive 2D and 3D Graphics," *Med Physics*, **12**:529, 1985.
5. **G.W. Sherouse**, D. Bourland, E. Chaney, J. Naves, J. Rosenman, M. Varia, "Evaluation of Image Transformation Software Used with an Ink Jet Printer for Hardcopy Output of Radiotherapy Treatment Plans Superimposed on Digital Medical Images," *Med Physics*, **12**:547, 1985.
6. **G.W. Sherouse**, J. Naves, J. Rosenman, M. Varia, "A Computer Spreadsheet for Rapid Planning of Brachytherapy Applications," *Int J Radiat Onc Bio Phys*, **11**, S1:92-93, 1985.
7. D. Bourland, E. Chaney, H. Fuchs, S. Mahaley, J. Naves, S. Pizer, J. Rosenman, **G.W. Sherouse**, E. Staab, M. Varia, R. Whaley, "3D Treatment Planning From CT Scans Using Fast Interactive Shaded Graphics," *Int J Radiat Onc Bio Phys*, **11**, S1:164, 1985.
8. H. McMurry, E. Chaney, S. Pizer, **G.W. Sherouse**, J. Rosenman, M. Varia, "Contrast Limited Adaptive Histogram Equalization of Radiotherapy Films," *Med Physics*, **13**:598, 1986.
9. J. Rosenman, H. McMurry, S. Pizer, **G.W. Sherouse**, E. Chaney, "The Use of Contrast-Limited AHE to Improve the Contrast of Radiotherapy Films," *Int J Radiat Onc Bio Phys*, **12**, S1:184, 1986.
10. **G.W. Sherouse**, C.E. Mosher, K.L. Novins, S.M. Pizer, H. Fuchs, E.L.Chaney, "Fast Interactive Smooth-shaded Rendition in Radiotherapy Treatment Design," *Med Physics*, **14**:459, 1987.
11. **G.W. Sherouse**, E.L. Chaney, "Production of Computed Radiographs for Therapy," *Med Physics*, **14**:477, 1987.
12. J.D. Bourland, **G.W. Sherouse**, E.L. Chaney, M.A. Varia, "Modeling of Dynamic Sources in Remote Afterloading," *Med Physics*, **14**:483, 1987.
13. J. Rosenman, E. Chaney, S. Pizer, **G.W. Sherouse**, H. Fuchs, "The Value of Three-dimensional Display Techniques in Radiation Therapy Treatment Planning," *Int J Radiat Onc Bio Phys*, **13**, S1:198, 1987.

14. J.D. Bourland, M.A. Varia, **G.W. Sherouse**, P.E. Stancil, L.D. Stanley, E.L. Chaney, H.L. McMurry, J.E. Tepper, "Incorporation of Emerging Technologies into the Design of a Radiation Oncology Facility," *Phys Med Biol*, **33**, sup. 1:55, 1988.
15. **G.W. Sherouse**, J.D. Bourland, K.L. Reynolds, H.L. McMurry, T.P. Mitchell, E.L. Chaney, "Virtual Simulation in a Physical World: Some Practical Considerations," *Phys Med Biol*, **33**, sup. 1:79, 1988.
16. **G.W. Sherouse**, "3D Computerized Treatment Design Using Modern Workstations," *Phys Med Biol*, **33**, sup. 1:140, 1988.
17. J.G. Rosenman, **G.W. Sherouse**, E.L. Chaney, J.E. Tepper, "Virtual Simulation - Software Simulating a Simulator - and an Integrated Treatment Planning System," *Int J. Radiat Onc Bio Phys*, **15**, S1:146, 1988.
18. **G.W. Sherouse**, J. Thorn, K. Novins, L. Margolese-Malin, C. Mosher, "/usr/planning: A Portable 3D Radiotherapy Treatment Design System," *Med Physics*, **16**:466, 1989.
19. L. Carey, **G.W. Sherouse**, J.D. Bourland, E.L. Chaney, "Water Phantom Measurements for Verifying Three Dimensional Dose Calculations for Megavoltage Photon Beams," *Med Physics*, **16**:473, 1989.
20. S.L. Sailer, **G.W. Sherouse**, E.L. Chaney, J.G. Rosenman, J.E. Tepper, "A Comparison of Post-operative Techniques for Laryngo-hypopharyngeal Carcinomas Using 3-dimensional Dose Distributions," *Int J Radiat Onc Biol Phys*, **19**, S1:191, 1990.
21. T.J. Cullip, **G.W. Sherouse**, J.R. Symon, J.G. Rosenman, E.L. Chaney, "Methods for Increasing the Speed of Computation of 3D Dose Distributions Using a Differential SAR Algorithm," *Med Physics*, **18**:624, 1991.
22. **G.W. Sherouse**, "A Unified Approach to Beam Weight Specification and Treatment Time Calculation," *Med Physics*, **18**:640, 1991.
23. M.R. Sontag, **G.W. Sherouse**, S.J. Hart, M.N. Dalton, A.M. Wolfe, "Clinical Use and Evaluation of Holographic Images for 3-D Radiation Therapy Treatment Planning," *Med. Physics*, **19**:822, 1992.
24. L. Marks, M. Sontag, D. Spencer, S. Ray, P. Antoine, **G.W. Sherouse**, G. Bentel, R.E. Coleman, R. Jaszczak, V. Tapson, L. Prosnitz, "Three Dimensional SPECT Lung Perfusion Scans in Designing Radiation Beams and in Predicting and Assessing the Physiologic Consequences of Thoracic Irradiation," *Int J. Radiat Onc Bio Phys*, **24**, S1:238, 1992.
25. **G.W. Sherouse**, E.L. Chaney, T.J. Cullip, S. Chang, E. Carey, "Tissue and Wedge Hardening Corrections," *Med. Physics*, **20**:878, 1993.
26. M.S. Anscher, D. Prescott, H. Reisenbichler, D. Spencer, G. Bentel, L.B. Marks, **G.W. Sherouse**, R.L. Jirtle, "Changes in Plasma TGF- β Levels During Pulmonary Radiotherapy as a Predictor of the Risk of Developing Late Radiation Pneumonitis," *Int J. Radiat Onc Bio Phys*, **27**, S1:182, 1993.
27. L.B. Marks, **G.W. Sherouse**, D.P. Spencer, G. Bentel, R. Clough, K. Vann, R. Jaszczak, E. Coleman, M.A. Anscher, L.R. Prosnitz "The Role of 3-dimensional Functional Lung Imaging in Treatment Planning: The Functional DVH," *Int J. Radiat Onc Bio Phys*, **30**, S1:197, 1994.
28. G.C. Bentel, L.B. Marks, K. Hedren, R. Krishnamurthy, **G.W. Sherouse**, D.P. Spencer, M.S. Anscher, D.M. Brizel, L.R. Prosnitz, "Facilitating reproducible fractionated radiation therapy with rigorous immobilization: Review of 4242 port films," *Radiotherapy and Oncology*, **40 (Suppl. 1)**:251, 1996.
29. **G.W. Sherouse** and S. Dieterich, "Experimental Comparison of Six Commercial Dosimetry Diodes for Measurement of Stereotactic Radiosurgery Cone Factors," *Med. Phys.* **37**:3262, 2010.

30. A. Dorgu, D. Pavord, J. Gong, **G.W. Sherouse**, and S. Kriminski, "Evaluation of Two Formulations of Commercial Water-Equivalent Plastic to Establish Suitability for Dosimetry of the ZEISS Intrabeam® 50 KVp X-Ray Source," *Med. Phys.* **37**:3252, 2010.
31. A. Dorgu, D. Pavord, **G.W. Sherouse**, J Gong, and S Kriminski, "Validation of Intrabeam® Bare Probe 50 KVp X-Ray Source Delivered Dose and Vendor Calculated Dose, Using Reference Dosimetry in a Water-Equivalent Phantom," *Med. Phys.* **37**:3250, 2010.

Presentations and Exhibits

1. "The MASTERSCAN System: A Microcomputer-based Controller for Radiation Therapy Beam Scanning Devices," 23rd Annual Meeting of the AAPM, Boston, August, 1981.
2. "Software Exchange by Electronic Mail," NCI-sponsored presentation, First Annual Radiation Oncology Software Exchange Workshop, Boston, September, 1984.
3. "A Device-independent Graphics Package," NCI-sponsored presentation, First Annual Radiation Oncology Software Exchange Workshop, Boston, September, 1984.
4. "Issues in Routine Electron Dosimetry," invited presentation, AAMD Third Annual Radiation Therapy Dosimetry Workshop, Chapel Hill, September, 1984.
5. "Three-dimensional Treatment Planning," invited presentation, AAMD Third Annual Radiation Therapy Dosimetry Workshop, Chapel Hill, September, 1984.
6. "Fourth Generation Computerized Radiotherapy Planning," invited presentation, Annual Meeting of the Southeast Chapter of the AAPM, Orlando, March, 1985.
7. "Evaluation of Image Transformation Software Used with an Ink Jet Printer for Hardcopy Output of Radiotherapy Treatment Plans Superimposed on Digital Medical Images," scientific exhibit, winner of annual award for best scientific exhibit, 27th Annual Meeting of the AAPM, Seattle, August, 1985.
8. "A Spreadsheet Program for Brachytherapy Planning," 27th Annual Meeting of the AAPM, Seattle, August, 1985.
9. "A Spreadsheet Program for Brachytherapy Planning," scientific exhibit, 27th Annual Meeting of the AAPM, Seattle, August, 1985.
10. "Planning Stereotactic ¹²⁵I Implants of the Brain Using Interactive 2D and 3D Graphics," 27th Annual Meeting of the AAPM, Seattle, August, 1985.
11. "What To Do When It's Too Slow (Concurrent Processing)," Second Annual Radiation Oncology Software Exchange Workshop, Chapel Hill, September, 1985.
12. "The Use of Adaptive Histogram Equalization for Enhancement of Radiation Therapy Port Films," Annual Meeting of the Southeast Chapter of the AAPM, Atlanta, April, 1986.
13. "Contrast Limited Adaptive Histogram Equalization of Radiotherapy Films," poster presentation, 28th Annual Meeting of the AAPM, Lexington, August 1986.
14. "Computer-Aided Design Tools for Radiotherapy," NCI-sponsored presentation, NCI Workshop on Advanced Computer Techniques in Radiotherapy, September, 1986.
15. "Treatment Planning Software at NCMH/UNC," invited presentation, Third Annual Radiation Oncology Software Exchange Workshop, Ann Arbor, September, 1986.

16. "Brachytherapy at NCMH/UNC," invited presentation, Scandanavian brachytherapy strategy meeting, Akademiska sjukhuset, Uppsala, Sweden, October, 1986.
17. "Use of Adaptive Histogram Equalization for Display of Megavoltage Images," Workshop on Megavoltage Imaging and Image Processing, Chapel Hill, February, 1987.
18. "User Interface Issues in Radiotherapy CAD Software," Ninth International Conference on the Use of Computers in Radiation Therapy, Scheveningen, The Netherlands, June, 1987.
19. "Virtual Simulation: Concept and Implementation," Ninth International Conference on the Use of Computers in Radiation Therapy, Scheveningen, The Netherlands, June, 1987.
20. "Radiation Therapy Workstations," AAPM Summer School, Ann Arbor, July, 1987.
21. "Fast Interactive Smooth-shaded Rendition in Radiotherapy Treatment Design," 29th Annual Meeting of the AAPM, Detroit, July 1987.
22. "Production of Computed Radiographs for Therapy" poster presentation, 29th Annual Meeting of the AAPM, Detroit, July 1987.
23. "Modeling of Dynamic Sources in Remote Afterloading," poster presentation, 29th Annual Meeting of the AAPM, Detroit, July 1987.
24. "Radiation Therapy Workstations," invited presentation, Fourth Annual Radiation Oncology Software Exchange Workshop, Galveston, September, 1987.
25. "Virtual Simulation Status Report," Annual Meeting of the Southeast Chapter of the AAPM, Winston-Salem, April, 1988.
26. "Automatic Digital Contrast Enhancement of Radiotherapy Films," presented in acknowledgement of Chapter Annual Award, Annual Meeting of the Southeast Chapter of the AAPM, Winston-Salem, April, 1988.
27. "Computer Languages," AAPM Summer School, Austin, August, 1988.
28. "Communications and Networks," AAPM Summer School, Austin, August, 1988.
29. "Virtual Simulation in a Physical World: Some Practical Considerations," 30th Annual Meeting of the AAPM, San Antonio, August 1988.
30. "3D Computerized Treatment Design Using Modern Workstations," poster presentation, 30th Annual Meeting of the AAPM, San Antonio, August 1988.
31. "Graphics Supercomputers for Radiotherapy Planning," invited presentation, American Conference on the Use of Computers in Radiation Therapy, Tucson, September, 1988.
32. "Toward Community-based Radiotherapy Software Development," invited presentation, Scientific meeting of the New England Chapter of the AAPM, Boston, December, 1988.
33. "Automatic Digital Contrast Enhancement of Radiotherapy Films," invited presentation, 17th International Congress of Radiology, Paris, July 1989.
34. "Virtual Simulation: Concept and Implementation," invited presentation, 17th International Congress of Radiology, Paris, July 1989.
35. "/usr/planning: A Portable 3d Radiotherapy Treatment Design System," 31th Annual Meeting of the AAPM, Memphis, July 1989.

36. "Evaluation of Workstations for Use in Radiotherapy Treatment Design," invited presentation, Second American Conference on the Use of Computers in Radiation Therapy, Philadelphia, August 1989.
37. "XOOT: The C++ X Toolkit for the rest of us," Fourth X Technical Conference, Boston, February, 1990.
38. "Images and Treatment Simulation," 1990 AAPM Summer School, Lawrence, Kansas, July 1990.
39. "Computer Graphics, Computer Vision, and Image Processing in Radiation Oncology Treatment Design," Workshop on Computer Graphics, Computer Vision, and Image Processing in Scientific Applications, SIGGRAPH 1991, Las Vegas, August 1991.
40. "Virtual Simulation," invited presentation, Annual Meeting of the South African Association of Physicists in Medicine and Biology, Bloemfontein, March 1993.
41. "A Mathematical Basis for Selection of Wedge Angle and Orientation," invited presentation, Annual Meeting of the South African Association of Physicists in Medicine and Biology, Bloemfontein, March 1993.
42. "Medical Physics in South Africa," Annual Meeting of the Southeast Chapter of the AAPM, Atlanta, March 1993.
43. "The Reality of Virtual Simulation," invited presentation, 3D Radiation Treatment Planning and Conformal Therapy: An International Symposium, St. Louis, April 1993.
44. "The Reality of Virtual Simulation," visiting professor, M. D. Anderson Cancer Center, January 1994.
45. "Virtual Simulation: Replacing the Simulator With a CT Scanner," invited presentation, 39th Annual San Francisco Cancer Symposium, San Francisco, February 1994.
46. "The Reality of Virtual Simulation" invited presentation, WESCAN '94, Winnipeg, Manitoba, March 1994.
47. "Beyond Geometry: Understanding Dosimetry in 3D," invited presentation, WESCAN '94, Winnipeg, Manitoba, March 1994.
48. "Is the Inverse Problem A Red Herring?," Eleventh International Conference on the Use of Computers in Radiation Therapy, Manchester, England, March 1994.
49. "Dose Homogenization Using Vector Analysis of Dose Gradients," Eleventh International Conference on the Use of Computers in Radiation Therapy, Manchester, England, March 1994.
50. "The GRATIS Treatment Design System," invited presentation, European Symposium on CT-based Simulation in Radiotherapy, Gent, Belgium, June 1994.
51. "Understanding Dosimetry in 3D," invited presentation, European Symposium on CT-based Simulation in Radiotherapy, Gent, Belgium, June 1994.
52. "Virtual Simulation: Replacing the Simulator With a CT Scanner," Annual Meeting of the South Carolina Society of Radiologic Technologists, Myrtle Beach, SC, March 1995.
53. "When Does Treatment Plan Optimization Require Inverse Planning?," invited presentation, 3rd ESTRO Biennial Meeting on Physics in Clinical Radiotherapy, Gardone Riviera, Italy, October 1995.
54. "Understanding Dosimetry in 3D," invited presentation, Techniques and Technology: New Approaches for Dosimetrists, Charleston, SC, March 1996.
55. "CT-based Therapy Simulation," Image Acquisition and Use in Radiation Oncology: 1996 SEAAPM Spring

Symposium, Charleston, SC, April 1996.

56. "Standard Tools and Their Use," invited presentation, From Conventional to Conformal Radiotherapy: 1996 Seminar of the Belgian Association of Radiotherapy-Oncology, Corsendonk, Belgium, June 1996.
57. "Conformal Radiotherapy Without Multileaf Collimators," invited presentation, ESTRO Teaching Course in Conformal Therapy and Other Advanced Radiation Techniques, Amsterdam, The Netherlands, June 1996.
58. "CT-based Therapy Simulation," invited presentation, ESTRO Teaching Course in Conformal Therapy and Other Advanced Radiation Techniques, Amsterdam, The Netherlands, June 1996.
59. "Radiotherapy Simulation," invited presentation, 1996 AAPM Summer School, Vancouver, British Columbia, Canada, June 1996.
60. "Conformal Radiotherapy Without Multileaf Collimators," invited presentation, Techniques and Technology: New Approaches for Dosimetrists, Mt. Pleasant, SC, March 1997.
61. "The GRATIS™ Treatment Design System," invited presentation, Meeting of the Great Lakes Chapter of the AAPM, Detroit, MI, June 1997.
62. "Conformal Radiotherapy Without Multileaf Collimators," invited presentation, ESTRO Workshop on Challenges in Conformal Radiotherapy, Nice, France, September 1997.
63. "Does the Simulator Still Have a Role to Play?," invited presentation and roundtable discussion, World Congress on Medical Physics and Biomedical Engineering, Nice, France, September 1997.
64. "Virtual Simulation," invited presentation, World Congress on Medical Physics and Biomedical Engineering, Nice, France, September 1997.
65. "A Short History of Appropriate Technologies in Radiation Oncology," invited presentation, Symposium of the Penn-Ohio Chapter of the AAPM, Pittsburgh, PA, September 2000.
66. "Quality Management is an Engineering Problem," invited presentation, Annual Meeting of the Swiss Society for Radiobiology and Medical Physics, Bern, Switzerland, October 2004.
67. "IMRT Deployment in the United States: A Cautionary Tale," invited presentation, Annual Meeting of the Swiss Society for Radiobiology and Medical Physics, Bern, Switzerland, October 2004.
68. "Quality Management is an Engineering Problem," oral presentation, Annual Meeting of the Southeast Chapter of the American Association of Physicists in Medicine, Charleston, SC, March 2005.
69. "Quality Management for IMRT: Where's the Science?" invited Symposium presentation, Annual Meeting of the AAPM, Seattle, WA, July 2005.
70. "Quality Management for IMRT: Where's the Science?" invited presentation, NCI Roundtable on Quality Management, Bethesda, MD, September 2005.
71. Organized, chaired and contributed a summary talk to a Professional Symposium on "HIPAA and the Medical Physicist," Annual Meeting of the AAPM, Orlando, FL, July 2006.
72. "It's Worse Than I Thought: Ruminations on lessons learned late regarding beam data measurement for treatment planning system commissioning," invited presentation, Annual Spring Meeting of the Florida Chapter of the AAPM, Orlando, FL, May 2007.
73. "Some things we've learned while commissioning a planning system for compensator IMRT....," invited presentation, Compensator-Based IMRT Symposium, Kissimmee, FL, September 2007.

74. Organized, chaired and contributed a summary talk to a Professional Symposium entitled "Professional Is As Professional Does," 50th Annual Meeting of the AAPM, Houston, TX, July 2008.
75. "What can the AAPM do to support your practice?" in Clinical Practice and Professional Services Activities Professional Symposium, 50th Annual Meeting of the AAPM, Houston, TX, July 2008.
76. "Polar Bears, Fault Trees and Rogue Cancer Units: A Meditation on the Evolution of Radiotherapy Quality Management," visiting professor, Stanford University Medical Center, August 2009.
77. "Negotiation Challenges for Medical Physicists," invited talk, 52nd Annual Meeting of the AAPM, Philadelphia, PA, July 2010
78. "Enhancing the Medical Physicist – Patient Relationship," invited talk, 52nd Annual Meeting of the AAPM, Philadelphia, PA, July 2010
79. "Dosimetry Detectors: The Devil is in the Details," invited talk Annual Meeting of the Swiss Society for Radiobiology and Medical Physics, Bern, Switzerland, November 2010.
80. "When a Treatment Error is not a Mistake," invited talk Midwinter Symposium of the Southern California Chapter of AAPM, Los Angeles, CA, February 2011.
81. "Quality and Safety Management of Radiation Oncology Software-dependent Devices," invited talk Annual Symposium of the Southeast Chapter of the AAPM, Myrtle Beach, SC, April 2011.
82. "Professional Etiquette," invited talk to the New Members' Symposium, 53rd Annual Meeting of the AAPM, Vancouver, BC, July 2011.

Service

Medical University of South Carolina

Member of Strategic Planning Committee for Information Systems

Member of *ad hoc* committee to promote activities of the South Carolina Bioengineering Alliance on the MUSC campus

Duke University Medical Center

Elected alternate member of Duke University Medical Center Clinical Sciences Faculty Council 1994-1996

Member of CSFC Subcommittee on Tenure and Promotions

Member of CSFC Subcommittee on Faculty Development

Professional Activities

Member of AAPM Ethics Committee, 2007-present

Member of AAPM Subcommittee on Practice Standards, 2011-present

Member of AAPM Professional Economics Committee 2006-2009, 2012-present

Chair of AAPM Professional Services Committee, 2007-2010

Chair of AAPM Peer Review Clearinghouse Subcommittee, 2008-2010

Member of AAPM Professional Council, 2007-2010

Member of Ad Hoc Committee on the Electronic Presence of AAPM, 2009

Member of Ad Hoc Committee on (AAPM) Mission Statement Revision, 2009

Elected Member-at-large of the Board of Directors of the AAPM, 2006-2008

Member of AAPM Ethics Committee Task Group 109, Rewrite of AAPM Code of Ethics, 2005-2008

Member of AAPM African Affairs Subcommittee 2002-2009.

President of the SEAAPM, 1995-1996

Co-organized and co-chaired 1996 SEAAPM Spring Symposium on Image Acquisition and Use in Radiation Oncology

President-elect of the SEAAPM, 1994-1995, organized and chaired chapter Annual Meeting.

Member of AAPM Computer Committee, 1993-2004

Organized and chaired first Software Demonstration scientific session at AAPM annual meeting, 1991.

Member of AAPM Committee on Special Interest Groups, 1990-1994

Elected first chairman of AAPM Computer Applications in Medical Physics Special Interest Group (CAMPSIG), 1989-1993

Member of AAPM Computer Committee Task Group on Artificial Intelligence

Organized and chaired the Workshop on Megavoltage Imaging and Image Processing, Chapel Hill, February, 1987.

Founded and maintained the MEDPHYS Internet mailing list, 1985-1994.

Organized and chaired the Second Annual Radiation Oncology Software Exchange Workshop, Chapel Hill, September, 1985.

Professional Societies

American Association of Physicists in Medicine, 1980-present

American Society for Therapeutic Radiology and Oncology, 1995-present

European Society for Therapeutic Radiology and Oncology, 1995-present

Southeast Chapter of AAPM, 1980-2008, 2012-present

New York (RAMPS) Chapter of AAPM, 2011

Midatlantic Chapter of AAPM, 2009-2010

American Association of University Professors, 1997-1999

Association for Computing Machinery, 1986-1999

The Computer Society of the IEEE, 1988-1999

Awards and Honors

Fellow of the AAPM, 2007

AAPM Medical Physics Travel Award, 1988

SEAAPM Annual Chapter Award for outstanding publication by a member, 1987

Best Scientific Exhibit, 1985 AAPM Annual Meeting