

1. Personal Information

1.1. Name: Jeffrey Vincent Siebers

1.2. Office Address

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2. Licensure

2.1. State License: Therapy Inspections & Shielding Design Inspector's License #RH-25-06-282,
11/2006 – 11/2009

2.2. Certification: American Board of Medical Physics, Radiation Oncology, 1999

3. Education

<u>Institution</u>	<u>Dates</u>	<u>Major</u>	<u>Degree</u>	<u>Year Awarded</u>
University of Wisconsin Madison, Wisconsin Ph.D. Thesis Title:	1988-1990	Medical Physics	Ph.D.	1990
	Shielding Measurements for 230 MeV Proton Accelerators			
University of Wisconsin Madison, Wisconsin	1986-1988	Medical Physics	M.S.	1988
University of Wisconsin Madison, Wisconsin	1982-1986	Applied Mathematics, Engineering and Physics	B.S.	1986

4. Military Service Record

None

5. Special Experience

1990-1997 Senior Physicist, Loma Linda University Medical Center Proton Therapy Facility
Following completion of my Ph.D., in lieu of a Post-Doc, I went to Loma Linda University Medical Center as a Senior Physicist to develop, test, calibrate, and commission the world's first hospital based proton radiation therapy center using the same accelerator that I used for my Ph.D. thesis research at Fermi National Laboratory.
Calibration of the proton therapy center required adapting existing radiation dosimetry protocols and recommendations to proton beam therapy. Furthermore, my responsibilities encompassed designing and developing improved radiation treatment beam delivery systems for use in the proton therapy facility.

6. Academic Appointments And Other Significant Work Experience

6.1. Appointments

- 2004-present Director, Medical Physics Graduate Program
Virginia Commonwealth University
Richmond, Virginia
- 2003-present Affiliate Faculty
Department of Physics
Virginia Commonwealth University
Richmond, Virginia
- 2003-present Associate Professor
Department of Radiation Oncology
Virginia Commonwealth University
Richmond, Virginia
- 2000 – 2005 Adjunct Graduate Faculty Member
Department of Biomedical Engineering
Virginia Commonwealth University
Richmond, Virginia
- Jan. 2002 – Acting Director
Sept. 2002 Radiation Physics Section
Department of Radiation Oncology
Virginia Commonwealth University
Richmond, Virginia
- 1997 – 2003 Assistant Professor
Department of Radiation Oncology
Virginia Commonwealth University
Richmond, Virginia
- 1996 – 1997 Assistant Professor
Department of Radiation Medicine
Loma Linda University
Loma Linda, California
- 1990 – 1997 Senior Physicist
Department of Radiation Medicine
Loma Linda University Medical Center
Loma Linda, California

6.2. Thesis Review Committees / External Thesis Reviewer

- 2007 Emily Claire Heath, PhD
McGill University, Montreal Canada
“Four-dimensional Monte Carlo Investigation of Organ Motion in Radiotherapy for Lung Cancer”
- 2005 Charles Kirkby, PhD
University of Alberta
“Energy Fluence Measurement with an a-Si EPID”
- 2005 Rohini George, MS, PhD
Department of Biomedical Engineering, Virginia Commonwealth University
“Investigating respiration reproducibility using audio and audio-visual biofeedback”

- 2002 Rohini George, MS
Department of Biomedical Engineering, Virginia Commonwealth University
“Quantifying the Effect of Intrafraction Motion During Breast IMRT Planning and Delivery”
- 2002 Sastry Vedam, MS, PhD
Department of Biomedical Engineering, Virginia Commonwealth University
“Management of Respiratory Motion in Radiation Oncology”

6.3. Grant Reviewer

- 2007 Dutch Cancer Society (KWF Kankerbestrijding) Grant Application Reviewer.
- 2005 International Science and Technology Center (ISTC) proposal reviewer, as a service to The Nuclear Nonproliferation (N) Division, Safeguards Systems Group, N-4 Los Alamos National Laboratory
- 1995 SBIR Grant Guest Reviewer

6.4. Independent Professional Consulting

- 2007 Consultant to Barnes Jewish Hospital
Regarding radiation shielding design for a proton radiation therapy facility
- 2005 Consultant to St. Jude Children’s Research Hospital
Regarding radiation shielding and room design for a proton radiation therapy facility
- 2001-2002 Consultant to Carpenter and Company Inc.
Regarding radiation shielding: Protection of hotel patrons and workers for hotel complex proposed adjacent to the MGH Proton Therapy Facility
- 1999-2000 Siva Protons
Design of dual scattering system for proposed proton therapy facility
- 1999 Optivus Technology
Proton Test Facility Radiation Shielding Design Study
- 1994-1996 G.H. Gillespie and Associates
Radiation Shielding assessment for the MGH proton therapy project
- 1995 Massachusetts General Hospital / IBA
Control systems review for the MGH proton therapy center

7. Memberships – Scientific, Honorary and Professional Societies

- 7.1. Full Member, American Association of Physicists in Medicine
- 7.2. Full Member, American Society for Therapeutic Radiology and Oncology
- 7.3. Mid-Atlantic Chapter of the American Association of Physicists in Medicine
- 7.4. The Medical Society of Virginia
- 7.5. Massey Cancer Center

8. Membership in Community Organizations

- 8.1. Derbyshire Baptist Church

- 8.2. Children's Museum of Richmond
- 8.3. Tuckahoe Little League
- 8.4. The Triplet Connection
- 8.5. YMCA Indian Guides
- 8.6. Tuckahoe Elementary School Parent Teacher Association
- 8.7. Tuckahoe Middle School Parent Teacher Association

9. Special Awards, Fellowships and other honors

- 9.1. Awards
- 9.2. Fellowships
- 9.3. Honors
2007 Nominated to AAPM Fellow

9.4. External Grants

Current:

National Institute of Health Program Project Grant: "Image Guided Adaptive Therapy"
P01 CA116602
Role: Project Leader, Co-Principal Investigator
Status: Active
Amount: \$1,116,686 (4/07-4/12)

Varian Medical Systems contract: "Dosimetry of dynamic intensity modulated radiotherapy with amorphous silicon electronic portal imaging devices"
Role: Principal Investigator
Status: Active
Amount: \$390,000 (10/06-10/09)

Past:

National Institute of Health Grant: "Optimized IMRT Incorporating Beam Delivery"
01-R01 CA098524-01
Role: Principal Investigator
Status: Active
Amount: \$1,217,524.86 (7/03-6/07).

Philips Medical Systems contract: "Monte Carlo Dose Calculation"
Role: Principal Investigator
Status: In negotiation for extended term
Amount: \$389,985 (3/03-4/07)

National Institute of Health Grant: "Outcome improvement potential with higher dose accuracy",
NIH/NCI R01-CA,
Role: Co-Investigator 7/98-11/01, Principal Investigator, 11/01-1/03
Status: 1/03: Closed out with NIH.
Amount: \$1,201,000 (7/98-6/01)

Varian Medical Systems contract: "Dosimetry of dynamic intensity modulated radiotherapy with amorphous silicon electronic portal imaging devices"

Role: Principal Investigator
Status: Replaced with new contract.
Amount: \$344,805 (1/01-12/05)

9.5. Invited seminars

1. Errors-and-margins, correction strategies. Pre-meeting workshop on “Image Guidance in Radiotherapy”, 9th Biennial ESTRO Meeting on Physics and Radiation Technology for Clinical Radiotherapy, September 2007, Barcelona, Spain.
2. Application of Monte Carlo to Clinical IMRT Treatment Planning, 49th Annual Meeting of the American Association of Physicists in Medicine, Minneapolis, Minnesota, 2007.
3. The effect of statistical noise on IMRT plan quality and convergence for MC-based and MC-correction—based optimized treatment plans. Third McGill International Workshop, May 29-June 1, 2007, Montreal, Canada.
4. Monte Carlo Radiation Therapy Dose Calculations for Time Dependent Geometries: First European Workshop on Monte Carlo Treatment Planning of the European Workgroup on MCTP, October 2006, Ghent, Belgium.
5. Therapy Continuing Education Course: Monte Carlo II: MC for Source and Machine Characterization, American Association of Physicists in Medicine Annual Meeting, July 2006, Orlando, Florida, (Abstract TU-A-230A-01: Med Phys, 33, 6 2179)
6. Monte Carlo Applications in IMRT Planning and Quality Assurance, 2006 AAPM Summer School Integrating New Technologies into the clinic: Monte Carlo and Image Guided Radiation Therapy, June 2006, Ontario, Canada.
7. Therapy Continuing Education Course: Monte Carlo for Radiotherapy II, 47th Annual AAPM Annual Meeting, July 2005, Seattle, Washington. (Abstract: Med Phys, 32, 6, 2152)
8. Monte Carlo Treatment Planning, Physicist and Physician Perspectives: Monte Carlo Dose Calculations for IMRT, American Association of Physicists in Medicine, July 2004, Pittsburgh, PA. (Abstract: Med Phys, 31, 6, 1799)
9. The Influence of Dose Modeling on IMRT, American Association of Physicists in Medicine, July 2004, Pittsburgh, PA. (Abstract: Med Phys, 31, 6, 1768)
10. Monte Carlo and IMRT, presented at the 2004 AAPM Summer School on Intensity-Modulated Radiation Therapy, The State of the Art, June 2003, Colorado Springs, Colorado
11. Application of Monte Carlo to Four-Dimensional Radiotherapy, MCNEG 2004: 10th UK Monte Carlo User Group Meeting, March 2004, Teddington, U.K.
12. Application of Monte Carlo to Intensity Modulated Radiation Therapy, MCNEG 2004: 10th UK Monte Carlo User Group Meeting, March 2004, Teddington, UK
13. Application of Monte Carlo to Advanced Radiation Therapy Problems, Seminar for the Department of Physics, Virginia Commonwealth University, November 21, 2003
14. “Monte Carlo and IMRT: Will Monte Carlo Dose Calculations Change Treatment Planning and Prescriptions for IMRT?”, American Society of Therapeutic Radiology and Oncology (ASTRO), October 20, 2003, Salt Lake City, Utah
15. Improving IMRT by incorporating beam delivery: How Monte Carlo can improve IMRT, January 28, 2003, MD Anderson Cancer Center
16. Application of Monte Carlo to proton beam radiation therapy, January 27, 2003, MD Anderson Cancer Center
17. IMRT dose evaluation: Improving IMRT dose evaluation and optimization by incorporating beam delivery, Fall meeting of the Missouri River Valley Chapter of the AAPM, November 2, 2002, St. Louis, Missouri

18. Monte Carlo for radiation therapy dose calculations, 44th Annual Meeting of the American Association of Physicists in Medicine, July 14-18, 2002, Montreal, Canada
19. Dose calculations for intensity modulated radiation therapy: Achieving accuracy in a timely fashion, 6th International Symposium on 3D Conformal Radiation Therapy and Intensity Modulated Radiation Therapy, June 29-July 1, 2001, Williamsburg, Virginia
20. Application of Monte Carlo to Proton Beam Radiation Therapy, Presented at MC 2000: Advanced Monte Carlo for Radiation Physics, Particle Transport Simulation and Applications, October 23-26, 2000, Lisbon, Portugal
21. Performance benchmarks of the MCV Monte Carlo system, XIIIth International Conference on the Use of Computers in Radiation Therapy, May 22-25, 2000, Heidelberg, Germany
22. Monte Carlo Dose Calculation for Radiation Therapy, Presented at the Workshop of the Science and Technology Committee of the Council on Ionizing Radiation Measurements and Standards, April 7, 2000, Gaithersburg, Maryland
23. Proton Dosimetry and Water Calorimetry, Council on Ionizing Radiation Measurements and Standard 1999 Annual Meeting, October 13, 1999. Gaithersburg, Maryland.
24. Monte Carlo Based Techniques for Photon Dose Calculations, 41st Annual Meeting of the American Association of Physicists in Medicine, July 25-29, 1999, Nashville, Tennessee.
25. Monte Carlo Based Dose Calculation Methods, Seminar for the Department of Medical Physics, University of Wisconsin, April 12, 1999
26. Medical Applications of Radiation. Particle Transport Methods, International Conference on Mathematics and Computations, Reactor Physics, and Environmental Analyses, May 2, 1995, Portland Oregon
27. Monte Carlo techniques for proton radiation therapy facilities, Simulating Accelerator Radiation Environments, January 11-15, 1993, Sante Fe, New Mexico

10. Major Committees

10.1. University

2000-2005 Member, Virginia Commonwealth University Research Computing Advisory Committee

10.2. Professional

2007-present Member, American Association of Physicists in Medicine Task Group No. 157, Commissioning of beam models in Monte Carlo-based clinical treatment planning

2006-present Member, International Atomic Energy Agency Advisory Committee on Phase Space Database for External Beam Radiotherapy

2006-present Member, American Association of Physicists in Medicine Calibration Laboratory Accreditation Subcommittee

2005 Consultant, International Nuclear Data Committee (INDC) , International Atomic Energy Agency (IAEA), Vienna, Austria

2003-present Member, American Association of Physicists in Medicine Task Group 105 Subcommittee, Clinical Implementation of Monte Carlo in Radiation Therapy Treatment Planning

2001 Advisor, NCI Monte Carlo Workshop, Oct 15 – 16 2001, Gatlinburg Tennessee. Topic: MC Validation

1995-2000	Consultant to ICRU Report 63, Nuclear Data for Neutron and Proton Radiotherapy and Radiation Protection
1994-1999	Consultant to ICRU Report 59, Clinical Proton Dosimetry, Part I: Beam Production, Beam Delivery and Measurement of Absorbed Dose
1994-1997	Consultant to PEREGRINE radiation therapy dose calculation project Lawrence Livermore National Laboratory

10.3. Other Committees

1998-present	VCU Radiation Oncology search committees for clinical and research physics faculty, physicians, medical residents, physics residents and post-doctoral research associates
2006	VCU Biostatistics faculty search committee
2005	VCU Physics faculty search committee
2002-2004	Medical Physics Graduate Program Development Committee, Chair
1998-2001	Department of Radiation Oncology Web-Page Design Committee

11. Other Significant Scholarly, Research, or Other Administrative Experience

11.1. Graduate students trained (degree and year) and current status.

2003-current	Joseph Moore, M.S. (2004)	<i>Currently pursuing Ph.D. in Medical Physics</i> Department of Physics, Virginia Commonwealth University
2004-current	Joseph Gardner, M.S. (2005)	<i>Currently pursuing Ph.D. in Medical Physics</i> Department of Physics, Virginia Commonwealth University
2005-2006	Lukas Hirschi, M.S. (2006)	Medical Physicist Abteilung für Medizinische Strahlenphysik (AMS), Berne Switzerland
2006-current	James Ververs	<i>Currently pursuing Ph.D. in Medical Physics</i> Department of Physics, Virginia Commonwealth University.
2007-current	Nahah Sayah	<i>Currently pursuing Ph.D. in Medical Physics</i> Department of Physics, Virginia Commonwealth University.

11.2. Postdoctoral trainees (current and past years) and current/last known status.

2007-present	Chenyu Yan	Post-Doctoral Associate Virginia Commonwealth University
2007-present	Song Wang	Post-Doctoral Associate Virginia Commonwealth University
2005-2007	John James Gordon	Post-Doctoral Associate Virginia Commonwealth University
2005-2007	Michael Kowalok	
2004-2007	Weidong Li	Medical Physicist SUNY Upstate Medical University
2004-2006	Ivaylo Mihaylov	Assistant Professor University of Arkansas

2002-2003	Lung Ko	Post-Doctoral Associate University of Virginia
1999-2002	Jong Oh Kim	Research Scientist CMS Medical Systems
1995-1996	Michael Traynor	Lucent Technologies

11.3. Major teaching assignments

2003-present	Course: Physics 563: Radiological Physics and Radiation Dosimetry (3 credits) Role: Course Instructor Typical Enrollment: 5-10 formal students plus 2 post doctoral research fellows
2001-2003	Course: Radiation Physics for Radiation Oncology Residents Department of Radiation Oncology, Virginia Commonwealth University Role: Course Director, Lecturer (8 lecture hours/annum) Typical Enrollment: 5-7 Residents

11.4. Other teaching/education assignments

2004-Current	Physics 633: Advanced Radiation Therapy, VCU Role: Lecturer (3 lectures/annum) Students: 3-5/annum
2002-Current	Radiation Physics weekly journal review Role: Co-director (Direct 1 session/month) Students: Graduate students, Post-Doc's and Radiation Oncology Physics Staff
1998-2001	Course: Radiation Physics for Radiation Oncology Residents, VCU Role: Lecturer (4 lecture hours/annum) Students: 3-5/annum
1998-2001	Course: CRS-342 Radiation Therapy Physics, VCU Role: Lecturer (5 lecture hours/annum) Students: 8-10 students/annum
1999-2000	Course: EGRB-690 Biomedical Engineering Seminar Role: Lecturer (1 seminar/annum)
1991-1996	Course: Radiation Therapy Physics and Mathematics for Radiation Therapist Training, Loma Linda University Medical Center Role: Lecturer (5 lectures/annum) Students: 5-7 students/annum

11.5. Scientific reviewer and editorial

2007 – 2010	Member, Editorial Board of Medical Physics, Associate Editor
2002-Current	AAPM Annual Meeting, Abstract Reviewer
2001-Current	International Journal of Radiation Oncology Biology and Physics Reviewer
1998-Current	Physics in Medicine and Biology Reviewer, Guest Associate Editor
1995-Current	Medical Physics Reviewer, Guest Associate Editor

2007	Radiotherapy and Oncology Reviewer
2004-2005	Radiation Research Reviewer
2001-2003	Radiation Oncology Investigations Reviewer
2001	6 th International Symposium on 3D Conformal Radiation Therapy and Intensity Modulated Radiation Therapy, June 29-July 1, 2001, Williamsburg, VA Conference Proceedings Editor

11.6. Conference session chairs

2000 – present	Session Chair American Association of Physicists in Medicine Annual Meetings 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007
October 23-26, 2000	Session Chair MC 2000: Advanced Monte Carlo for Radiation Physics, Particle Transport Simulation and Applications, Lisbon, Portugal
May 29 – June 1, 2007	Session Chair Monte Carlo Techniques in Radiotherapy delivery and verification, Third McGill International Workshop, Montreal, Canada

11.7. Other administrative experience

Jan 2004- Current	Director Medical Physics Graduate Program Virginia Commonwealth University Richmond, Virginia
Jan 2002-Sept 2002	Acting Director Radiation Physics Section Department of Radiation Oncology Virginia Commonwealth University Richmond, Virginia
2001-2003	IMRT QA Coordinator Department of Radiation Oncology, VCU
Mar 2002	Varian Portal Vision aS500 Dosimetry Collaboration Meeting, March 1,2, 2002 Role: Local arrangements coordinator for meeting of over 20 experts in EPID dosimetry
2001	6 th International Symposium on 3D Conformal Radiation Therapy and Intensity Modulated Radiation Therapy, June 29-July 1, 2001, Williamsburg, VA Role: Conference co-organizer Responsibilities: Editor, Conference Proceedings, Interface to VCU CME office General conference organization

12. BIBLIOGRAPHY

12.1. Papers published

1. Coutrakon G, Bauman M, Lesyna D, Miller D, Nusbaum J, Slater J, Johanning J, Miranda J, DeLuca PM, Jr., Siebers J, et al. A prototype beam delivery system for the proton medical accelerator at Loma Linda. *Med Phys* 1991;18:1093-1099.
2. Coutrakon G, Miller D, Kross BJ, Anderson DF, DeLuca PM, Jr., Siebers JV. A beam intensity monitor for the Loma Linda cancer therapy proton accelerator. *Med Phys* 1991;18:817-820.
3. Siebers JV, DeLuca PM, Pearson DW, Coutrakon G. Measurement Of Neutron Dose Equivalent And Penetration In Concrete For 230 MeV Proton-Bombardment Of Al Targets, Fe Targets, And Pb Targets. *Radiation Protection Dosimetry* 1992;44:247-251.
4. Siebers JV, DeLuca PM, Jr., Pearson DW, Coutrakon G. Shielding measurements for 230 MeV protons. *Nuclear Science & Engineering* 1993;115:13-23.
5. Robertson JB, Glisson WC, Archambeau JO, Coutrakon G, Miller DW, Moyers MF, Siebers JV, Slater JM, Dicello JF. The relative biological effectiveness of attenuated protons. In: Swenberg CE, Horneck G, Stassinopoulos ED, editors. *Biological Effects and Physics of Solar and Galactic Cosmic Radiation (NATO ASI Series)*. New York: Plenum; 1993.
6. Robertson JB, Eaddy JM, Archambeau JO, Coutrakon GB, Miller DW, Moyers MF, Siebers JV, Slater JM, Dicello JF. Relative biological effectiveness and microdosimetry of a mixed energy field of protons up to 200 MeV. *Adv Space Res* 1994;14:271-275.
7. Siebers JV, Vatnitsky SM, Miller DW, Moyers MF. Deduction of the air w value in a therapeutic proton beam. *Phys Med Biol* 1995;40:1339-1356.
8. Vatnitsky SM, Siebers JV, Miller DW. Calorimetric determination of the absorbed dose-to-water beam quality correction factor k_Q for high-energy photon beams. *Med Phys* 1995;22:1749-1752.
9. Vatnitsky S, Miller D, Siebers J, Moyers M. Application of solid state detectors for dosimetry of therapeutic proton beams. *Med Phys* 1995;22:469-473.
10. Siebers JV, DeLuca PM, Pearson DW, Prael RE. Shielding calculations for 230-MeV protons using the LAHET code system. *Nuclear Science And Engineering* 1996;122:258-266.
11. Vatnitsky S, Siebers J, Miller D, Moyers M, Schaefer M, Jones D, Vynckier S, Hayakawa Y, Delacroix S, Isacson U, Medin J, Kacperek A, Lomax A, Coray A, Kluge H, Heese J, Verhey L, Daftari I, Gall K, Lam G, Beck T, Hartmann G. Proton dosimetry intercomparison. *Radiother Oncol* 1996;41:169-177.
12. Vatnitsky SM, Siebers JV, Miller DW. k_Q factors for ionization chamber dosimetry in clinical proton beams. *Med Phys* 1996;23:25-31.
13. Siebers JV, Traynor M. Modeling of proton treatment nozzles with the LAHET Monte Carlo code. *Journal of Brachytherapy International* 1997;13:95-99.
14. Zankowski C, Vatnitsky S, Siebers J, Podgorsak EB. Proton beam output measurement with an extrapolation chamber. *Med Dosim* 1998;23:288-291.
15. Siebers JV, Mukhopadhyay D. Modelling production of beta+ emitting isotopes by proton therapy beams using the LAHET Code System. *Radiation Physics And Chemistry* 1998;51:601-602.
16. Libby B, Siebers J, Mohan R. Validation of Monte Carlo generated phase-space descriptions of medical linear accelerators. *Med Phys* 1999;26:1476-1483.
17. Chadwick MB, Jones DT, Barschall HH, Caswell RS, DeLuca PM, Jr., Meulders JP, Wambersie A, Schuhmacher H, Young PG, Hale GM, Siebers JV. Nuclear data for radiotherapy: presentation of a new ICRU report and IAEA initiatives. *Strahlenther Onkol* 1999;175 Suppl 2:26-29.
18. Siebers JV, Keall PJ, Libby B, Mohan R. Comparison of EGS4 and MCNP4b Monte Carlo codes for generation of photon phase space distributions for a Varian 2100C. *Phys Med Biol* 1999;44:3009-3026.

19. Arnfield MR, Siebers JV, Kim JO, Wu Q, Keall PJ, Mohan R. A method for determining multileaf collimator transmission and scatter for dynamic intensity modulated radiotherapy. *Med Phys* 2000;27:2231-2241.
20. Mohan R, Arnfield M, Tong S, Wu Q, Siebers J. The impact of fluctuations in intensity patterns on the number of monitor units and the quality and accuracy of intensity modulated radiotherapy. *Med Phys* 2000;27:1226-1237.
21. Arnfield MR, Siantar CH, Siebers J, Garmon P, Cox L, Mohan R. The impact of electron transport on the accuracy of computed dose. *Med Phys* 2000;27:1266-1274.
22. Keall PJ, Siebers JV, Jeraj R, Mohan R. The effect of dose calculation uncertainty on the evaluation of radiotherapy plans. *Med Phys* 2000;27:478-484.
23. Siebers JV, Keall PJ, Nahum AE, Mohan R. Converting absorbed dose to medium to absorbed dose to water for Monte Carlo based photon beam dose calculations. *Phys Med Biol* 2000;45:983-995.
24. Kim JO, Siebers JV, Keall PJ, Arnfield MR, Mohan R. A Monte Carlo study of radiation transport through multileaf collimators. *Med Phys* 2001;28:2497-2506.
25. Keall PJ, Siebers JV, Arnfield M, Kim JO, Mohan R. Monte Carlo dose calculations for dynamic IMRT treatments. *Phys Med Biol* 2001;46:929-941.
26. Siebers JV, Tong S, Lauterbach M, Wu Q, Mohan R. Acceleration of dose calculations for intensity-modulated radiotherapy. *Med Phys* 2001;28:903-910.
27. Siebers JV, Lauterbach M, Tong S, Wu Q, Mohan R. Reducing dose calculation time for accurate iterative IMRT planning. *Med Phys* 2002;29:231-237.
28. Siebers JV, Keall PJ, Kim JO, Mohan R. A method for photon beam Monte Carlo multileaf collimator particle transport. *Phys Med Biol* 2002;47:3225-3249.
29. Siebers JV, Lauterbach M, Keall PJ, Mohan R. Incorporating multi-leaf collimator leaf sequencing into iterative IMRT optimization. *Med Phys* 2002;29:952-959.
30. Beckham WA, Keall PJ, Siebers JV. A fluence-convolution method to calculate radiation therapy dose distributions that incorporate random set-up error. *Phys Med Biol* 2002;47:3465-3473.
31. Jeraj R, Keall PJ, Siebers JV. The effect of dose calculation accuracy on inverse treatment planning. *Phys Med Biol* 2002;47:391-407.
32. Keall P, Siebers J. Dosimetric advantage of using 6 MV over 15 MV photons in conformal therapy of lung cancer: Monte Carlo studies in patient geometries. PG - 260. *J Appl Clin Med Phys* 2002;3.
33. Keall PJ, Siebers JV, Jeraj R, Mohan R. Radiotherapy dose calculations in the presence of hip prostheses. *Med Dosim* 2003;28:107-112.
34. George R, Keall PJ, Kini VR, Vedam SS, Siebers JV, Wu Q, Lauterbach MH, Arthur DW, Mohan R. Quantifying the effect of intrafraction motion during breast IMRT planning and dose delivery. *Med Phys* 2003;30:552-562.
35. Keall PJ, Chock LB, Jeraj R, Siebers JV, Mohan R. Image reconstruction and the effect on dose calculation for hip prostheses. *Med Dosim* 2003;28:113-117.
36. Keall PJ, Siebers JV, Libby B, Mohan R. Determining the incident electron fluence for Monte Carlo-based photon treatment planning using a standard measured data set. *Med Phys* 2003;30:574-582.
37. Keall PJ, Todor AD, Vedam SS, Bartee CL, Siebers JV, Kini VR, Mohan R. On the use of EPID-based implanted marker tracking for 4D radiotherapy. *Med Phys* 2004;31:3492-3499.

38. Kang SK, Cho BC, Park SH, Park HC, Bae H, Kim JO, Keall PJ, Siebers JV. Monte Carlo-based treatment planning for a spoiler system with experimental validation using plane-parallel ionization chambers. *Phys Med Biol* 2004;49:5145-5155.
39. Fix MK, Keall PJ, Dawson K, Siebers JV. Monte Carlo source model for photon beam radiotherapy: photon source characteristics. *Med Phys* 2004;31:3106-3121.
40. Siebers JV, Kim JO, Ko L, Keall PJ, Mohan R. Monte Carlo computation of dosimetric amorphous silicon electronic portal images. *Med Phys* 2004;31:2135-2146.
41. Keall PJ, Siebers JV, Joshi S, Mohan R. Monte Carlo as a four-dimensional radiotherapy treatment-planning tool to account for respiratory motion. *Phys Med Biol* 2004;49:3639-3648.
42. Ko L, Kim JO, Siebers JV. Investigation of the optimal backscatter for an aSi electronic portal imaging device. *Phys Med Biol* 2004;49:1723-1738.
43. Moore JA, Siebers JV. Verification of the optimal backscatter for an aSi electronic portal imaging device. *Phys Med Biol* 2005;50:2341-2350.
44. Fix MK, Keall PJ, Siebers JV. Photon-beam subsource sensitivity to the initial electron-beam parameters. *Med Phys* 2005;32:1164-1175.
45. Keall PJ, Joshi S, Vedam SS, Siebers JV, Kini VR, Mohan R. Four-dimensional radiotherapy planning for DMLC-based respiratory motion tracking. *Med Phys* 2005;32:942-951.
46. Siebers JV, Keall PJ, Wu Q, Williamson JF, Schmidt-Ullrich RK. Effect of patient setup errors on simultaneously integrated boost head and neck IMRT treatment plans. *Int J Radiat Oncol Biol Phys* 2005;63:422-433.
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48. El Naqa I, Kawrakow I, Fippel M, Siebers JV, Lindsay PE, Wickerhauser MV, Vicic M, Zakarian K, Kauffmann N, Deasy JO. A comparison of Monte Carlo dose calculation denoising techniques. *Phys Med Biol* 2005;50:909-922.
49. Li W, Siebers JV, Moore JA. Using fluence separation to account for energy spectra dependence in computing dosimetric a-Si EPID images for IMRT fields. *Medical Physics* 2006;33:4468.
50. Sakthi N, Keall P, Mihaylov I, Wu Q, Wu Y, Williamson JF, Schmidt-Ullrich R, Siebers JV. Monte Carlo-based dosimetry of head-and-neck patients treated with SIB-IMRT. *Int J Radiat Oncol Biol Phys* 2006;64:968-977.
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52. Dogan N, Siebers JV, Keall PJ, Lerma F, Wu Y, Fatyga M, Williamson JF, Schmidt-Ullrich RK. Improving IMRT dose accuracy via deliverable Monte Carlo optimization for the treatment of head and neck cancer patients. *Med Phys* 2006;33:4033-4043.
53. Lauve AD, Siebers JV, Crimaldi AJ, Hagan MP, Kealla PJ. A dynamic compensation strategy to correct patient-positioning errors in conformal prostate radiotherapy. *Med Phys* 2006;33:1879-1887.
54. Jang SY, Liu HH, Wang X, Vassiliev ON, Siebers JV, Dong L, Mohan R. Dosimetric verification for intensity-modulated radiotherapy of thoracic cancers using experimental and Monte Carlo approaches. *Int J Radiat Oncol Biol Phys* 2006;66:939-948.
55. Jang SY, Vassiliev ON, Liu HH, Mohan R, Siebers JV. Development and commissioning of a multileaf collimator model in monte carlo dose calculations for intensity-modulated radiation therapy. *Med Phys* 2006;33:770-781.

56. Keall P, Vedam S, George R, Bartee C, Siebers J, Lerma F, Weiss E, Chung T. The clinical implementation of respiratory-gated intensity-modulated radiotherapy. *Med Dosim* 2006;31:152-162.
57. Dogan N, Siebers JV, Keall PJ. Clinical comparison of head and neck and prostate IMRT plans using absorbed dose to medium and absorbed dose to water. *Phys Med Biol* 2006;51:4967-4980.
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1. Siebers, J.V., Li, W, 2006 Fast Monte Carlo-based computation of a-Si EPID dose images for IMRT treatment fields, 9th International Meeting on Electronic Portal Imaging (EPI2K6), (Melbourne, Australia) 99-100.
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7. Siebers J V 2001 Dose calculations for intensity modulated radiation therapy: Achieving accuracy in a timely fashion, 6th International Symposium on 3D Conformal Radiation Therapy and Intensity Modulated Radiation Therapy, (Williamsburg, Virginia) 179-80
8. Keall P J, Siebers J V, and Mohan R 2000 The impact of Monte Carlo dose calculations on treatment outcomes, XIII International Conference on the Use of Computers in Radiation Therapy, (Heidelberg, Germany) 425-427
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12.6. Patents

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| 1996 | Patent Number: 5,511,549
Title: Normalizing and calibrating therapeutic radiation delivery systems
Inventors: Legg; D. B. Coutrakon; G.; Slater; J. W.; Miller; D. W. Moyers; M. F.; Siebers; J. V. |
| 1995 | Patent Number: 5,440,133
Title: Charged Particle Beam Scattering System
Inventors: Moyers, M. F. and Siebers, J. V. |

12.7. Community service presentations

“Potential of Proton Radiation Therapy”, Lecture to “Friends of the Library”, Massey Cancer Center Library, September 1998.