



CEDARS-SINAI MEDICAL CENTER

CURRICULUM VITAE

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Business Data: Address: CSMC Department of Radiation Oncology, 8700 Beverly Blvd., AC 1085
Los Angeles, CA 90048
Telephone: (310) 423-6133

Education: 1970-1974 B.S. (Physics), Stanford University, Palo Alto CA
1974-1975 M.S. (Physics), University of Illinois, Urbana-Champaign, IL
1975-1980 Ph.D. (Physics), University of Illinois, Urbana-Champaign, IL
1980-1982 Fellowship: Staff Fellow, Radiation Oncology Branch, National Cancer Institute,
National Institutes of Health, Bethesda MD

Licensure: n/a

Board Certification: Certified: American Board of Radiology: Therapeutic Radiological Physics, 1985
Certified: American Board of Medical Physics: Radiation Oncology Physics, 1990

Professional Experience:

7/2013-- Health Sciences Clinical Professor, Step IV, Department of Radiation Oncology,
University of California Los Angeles, Los Angeles, California

1/2012-- Vice Chair for Research, Professor and Director of Medical Physics, Department
of Radiation Oncology, Cedars-Sinai Medical Center, Los Angeles, CA

8/2011-- Core Member, Samuel Oschin Comprehensive Cancer Institute, Cedars-Sinai
Medical Center, Los Angeles, CA

5/2011--1/2012 Vice Chair for Research, Director of Medical Physics, and Research Investigator
IV, Department of Radiation Oncology, Cedars-Sinai Medical Center, Los
Angeles, CA

9/2009--4/2011 Allen S. Lichter Professor of Radiation Oncology and Director of Radiation
Physics, Department of Radiation Oncology, University of Michigan Medical
Center

9/1995--8/2009 Professor and Director of Radiation Physics, Department of Radiation Oncology,
University of Michigan Medical Center

1/1993--4/2011 University of Michigan BioEngineering Program Faculty

9/1988--8/1995 Associate Professor and Director of Radiation Physics, Department of Radiation
Oncology, University of Michigan Medical Center

1/1986--4/2011 Member, University of Michigan Cancer Center

4/1984--8/1988 Assistant Professor and Director of Radiation Physics, Department of Radiation
Oncology, University of Michigan Medical Center

1/1984--4/1984 Radiation Physicist, Radiation Oncology Branch, National Cancer Institute,
National Institutes of Health

1/1983--1/1984 Senior Staff Fellow, Radiation Oncology Branch, National Cancer Institute,
National Institutes of Health

1/1980--12/1982 Staff Fellow, Radiation Oncology Branch, National Cancer Institute, National
Institutes of Health

6/1975--1/1980 Research Assistant, Physics, University of Illinois

9/1974--6/1975 Teaching Assistant, Physics, University of Illinois

1/1974--6/1974 Teaching Assistant, Physics, Stanford University

**Professional
Activities:**

Committee Service

Editorial Boards

1992-98 Associate Editor, Medical Physics

1997-00 International Advisory Board, Physics in Medicine and Biology

2004-05 Associate Editor, Medical Physics

2011-12 Guest Editor, Quality, Safety and Outcomes Issue of Seminars in Radiation Oncology

Regular Review of Peer-Written Manuscripts

1983-- International Journal of Radiation Oncology Biology Physics

1983-- Medical Physics

1984-- Radiology

1989-- Radiotherapy and Oncology

1992-- Physics in Medicine and Biology

2000-- Technology in Cancer Treatment and Research

2011-- Practical Radiation Oncology

Sabbatical

1994 The Netherlands Cancer Institute - Antoni van Leeuwenhoek Hospital Department of Radiotherapy - Amsterdam, The Netherlands

2005 The Netherlands Cancer Institute – Antoni van Leeuwenhoek Hospital Department of Radiotherapy – Amsterdam, the Netherlands

NCI Cooperative Working Groups

1981-84 NCI Intraoperative Radiation Therapy Working Group

1986-89 NCI Electron Treatment Planning Working Group

1998-01 NCI Intensity Modulated Radiation Therapy Collaborative Working Group

2002-05 NCI/NSF Collaborative Optimization Working Group

Study Sections

1981-84 NCI Radiation Research Program Internal Source Evaluation Groups

1983-84 NCI Radiation Research Program Review Committee

1990-05 NCI Program Project Site Visit Teams

1992-98 NCI Diagnostic Radiology Study Section Ad Hoc Reviews

1992-- Netherlands Cancer Board Ad Hoc Reviews

2000 Ad Hoc Reviewer, Ontario Cancer Foundation, Canada

2004 NCI Study Section: Novel Technologies for In Vivo Imaging, PAR 03-124

2005 NCI Radiation Study Section: Ad Hoc Reviewer

2006 NCI Study Section: BioMedical Imaging, ZRG1 SBIB-Q50

2006 NCI Study Section: Quick Trial on Imaging and Image-Guided Intervention, ZRG1 SBIB-A50

2006 NCI Clinical Program Project Special Emphasis Panel ZCA1 RPRB-M (J1)

2007 NCI Special Emphasis Panel/Scientific Review Group 2008/01 ZRG1 ONC-P (02)

2007 NCI Study Section: Quick Trial on Imaging and Image-Guided Intervention, ZRG1 SBIB-A50

2007 NCI Study Section: Quick Trial on Imaging and Image-Guided Intervention, ZRG1 SBIB-Q51

2008 NCI Clinical Studies Special Emphasis Panel

2009 ZRG1 OTC-K (58) in Oncology-2 Translational Clinical IRG (OTC)

2009 ZRG1 OTC-K (58) RC1 Challenge Grant Study Section, NCI

2009 ZCA1 SRLB-C (08) RC2 Go Grant Study Section, NCI

2010 ZCA1 RPRB P01 Grant Study Section, NCI

2012 ZRG1 SBIB-Q 80 Study Section, NIH

2013 NCI R21/R03 Omnibus applications in Cancer Therapy, NIH

2013 NCI ZCA1 SRLB-J J1 S, Special Emphasis Panel, P20 applications for PAR-13-096, "Planning for a National Center for Particle Beam Radiation Therapy Research", NIH

2014 NCI ZCA1-TCRB-U (O1), Special Emphasis Panel, P20 applications for PAR-13-371, "Planning for a National Center for Particle Beam Radiation Therapy Research", NIH

- 2015 NCI ZRG1-SBIB-F(56)R, Special Emphasis Panel for PAR-14-166 “Early Phase Clinical Trials in Imaging and Image-Guided Interventions”, NIH
- 2015 NCI BAA-N01CM51007-51, A Prospective Randomized Trial of Carbon Ion versus Conventional Radiation Therapy for Locally Advanced Unresectable Pancreatic Cancer, NIH

Committee Service: International

- 1991-98 U.S. Technical Advisory Group to the International Electrotechnical Commission (IEC): Data Exchange Sub-Group
- 1999-04 Task Force on Quality Assurance for Treatment Planning, International Atomic Energy Agency (IAEA), Vienna, Austria
- 2001 National Cancer Institute Monte Carlo Workshop, Co-chair, Gatlinburg Tennessee, October 2001
- 2002 German Cancer Research Center (DKFZ) External Review, November 2002
- 2003 International Review Committee, Graduate School for Biomedical Image Sciences, University of Utrecht, Utrecht, The Netherlands, October 2003.
- 2007 International Scientific Advisory Board (ISAB) of the XVth International Conference on the Use of Computers in Radiation Therapy (ICCR), Toronto, Canada, June 4-7, 2007
- 2009 Symposium on the Promise and Perils of Proton Radiotherapy, Scientific Organizing Committee, Baltimore MD May 8-9, 2009
- 2009 World Congress on Medical Physics 2009, Treatment Planning Track organizer, Munich, Germany (September 7 -12, 2009)
- 2010-13 User Review Committee for “A hybrid MRI radiotherapy system”, PI Prof. J.J.W. Lagendijk, Technology Foundation STW, Utrecht, the Netherlands
- 2012-- International Organization of Medical Physics, Science Committee

Committee Service: National

American Association of Physicists in Medicine:

- 1983-88 Task Group #30, Low Energy Dosimetry
- 1986-89 Program Committee
- 1986 Works-in-Progress Coordinator
- 1987 Scientific Program Coordinator
- 1987-88 Program Committee, 1988 World Congress of Medical Physics
- 1987-88 Task Group #4, Quality Assurance in Medical Computer Systems
- 1986-91 Task Group #35, Accelerator Safety
- 1988-91 Radiation Therapy Committee
- 1992-97 Chairman, Task Group #53, Treatment Planning Quality Assurance
- 1996-00 Ad-Hoc Advisory Committee to the Food and Drug Administration
- 1999-04 Task Group # 67, Benchmark Datasets for Photon Beams
- 2001-03 Technology Assessment Committee
- 2003-05 Board of Directors
- 2004-16 Task Group 100: Radiation Therapy Quality Assurance
- 2005-09 Therapy Research Subcommittee: Chair
- 2005-14 Therapy Physics Committee
- 2005-14 Science Council
- 2007-10 Working Group on Federal Research Funding: Chair
- 2009-13 Research Committee: Chair
- 2010-12 Ad Hoc Safety Coordination Committee
- 2011-14 Technology Assessment Committee
- 2013-15 Task Group 244: Minimum Practice Guidelines for Treatment Planning QA
- 2014 Nominating Committee
- 2016 Science Council Associates Mentorship Program Consultant
- 2016-- Awards and Honors Committee
- 2016-- Science Council: Chair
- 2016-- Strategic Planning Committee of the Board
- 2016-- Ad Hoc Committee on Governance Assessment
- 2016-- Board of Directors (ex officio)
- 2016-- Professional Council (ex officio)
- 2016-- Administrative Council (ex officio)
- 2016-- Educational Council (ex officio)

- 2016-- Electronic Media Coordinating Committee (ex officio)
- 2016-- Finance Committee (ex officio)
- 2016-- Research Committee (ex officio)
- 2016-- Summer School Scholarships Subcommittee
- 2016-- Working Group on Task Group Review Streamlining

American Society of Therapeutic Radiology and Oncology

- 2000-09 Technology Assessment Committee
- 2004-10 ASTRO Liaison to AAPM TG100
- 2007-11 Chair, Multidisciplinary QA Subcommittee
- 2010-14 Radiation Physics Committee
- 2010 ASTRO Rep to ASTRO/AAPM/ACR Task Force on Quality Assurance and Safety
- 2010-11 Clinical Affairs and Quality Committee
- 2010-15 Physics Resource Panel
- 2011-12 Blue Book Steering Committee
- 2012-15 Multidisciplinary QA Committee
- 2012-16 Co-Chair, ASTRO IHE-RO Committee
- 2012-15 Co-Chair, National Radiation Oncology Registry
- 2012-16 Science Council Steering Committee
- 2013-14 Science Workshop Committee
- 2013-14 Annual Meeting Track - Physics
- 2014-16 Radiation Oncology Healthcare Advisory Council (RO-HAC), associated with the ASTRO/AAPM Radiation Oncology Incident Learning System
- 2014-15 Scientific Organizing Committee, Workshop on Opportunities for Radiation Oncology in the Era of Big Data, Bethesda MD, August 2015
- 2015-16 Prescription White Paper Writing Group
- 2015-- Fellows Selection Committee

Radiation Oncology Safety Stakeholders Initiative

- 2010-16 Founder and Co-Chair

Committee Service: Institutions

Cedars-Sinai Medical Center

- 2011 -- Samuel Oschin Comprehensive Cancer Institute
- 2011-- Radiation Oncology Practice Improvement Committee
- 2011-- Radiation Oncology Quality and Safety Committee, Chair
- 2011-14 Radiation Oncology Safety Team, Chair
- 2012-13 Cancer Institute Executive Committee
- 2012-- Cancer Quality Committee

University of Michigan

- 1984-88 Departmental Radiotherapy Technologist School
- 1984-89 Departmental Resident Admissions Committee
- 1985-87 University of Michigan Hospital Network Coordinating Committee
- 1986-11 Member, University of Michigan Comprehensive Cancer Center
- 1986 Committee to Establish a Graduate Medical Physics Program
- 1987-90 Department Operations Committee
- 1990-96 Department Promotions Committee
- 1995-11 Radiation Oncology Computer Policy Committee
- 2006-11 Lean II: 3-D Treatment Planning Efficiency Team
- 2011-18 External Scientific Advisory Committee, Program Project Grant "Optimization of High Dose Conformal Therapy", PIs Randall K. Ten Haken, Ph.D. and Theodore S. Lawrence, M.D., Ph.D.

Virginia Medical University

- 2000-01 External Advisory Committee, Program Project Grant "Maximizing the Potential of Intensity Modulated Radiation Therapy", P.I.: Radhe Mohan, Ph.D.

Wake Forest University

- 2004-15 External Advisory Board: Training Program in Translational Radiation Oncology. PI: Mike Robbins, Ph.D.

This project studies imaging markers for post-treatment inflammation in breast cancer (both an animal model and later in patients)

Role: co-Investigator

\$50,000 costs annually, \$100,000 total cost, 2 years

SOCCL Martz Foundation

Yue (PI)

1/1/14 – 12/31/15

Identifying Basal-like Triple-negative Breast Cancer using Imaging Biomarkers together with Tissue Biomarkers

This project will PET, MRI/DCE and MRI/DW textures and other markers in triple negative breast cancer patients and correlate imaging markers and FOXC1 with outcome

Role: mentor

\$ 75,000 costs annually, \$150,000 total cost, 2 years

Susan Scott Foundation Equipment Grant

Fraass (PI)

4/2014 – 2016

Implementation of Integrated Quality Monitor for Radiotherapy Quality Assurance

The goal is the study and eventual clinical implementation of a new type of in-line real-time beam delivery QA device.

Role: PI

\$ 55,000 cost. 1 year.

Submitted

NCI R21

Yue (PI)

7/1/17 – 6/30/19

Targeted Molecular-genetic Imaging for Aggressive Breast Cancer

This project studies a new genomic imaging strategy for triple negative breast cancer patients to improve diagnosis and disease monitoring

Role: Consultant

\$270,000 direct annually, \$ 540,000 total direct cost, 2 years.

Submitted 2/2017

NCI R01

Yue (PI)

10/1/16 – 9/30/21

Radiogenomic Signatures for Stratification of Triple-negative Breast Cancer

This project studies genomic and radiomics biomarkers for triple negative breast cancer patients and correlates the radiogenomic markers with patient outcome.

Role: Consultant

\$250,000 direct annually, \$ 1,250,000 total direct cost, 5 years.

Submitted 12/2015

NCI R01

Tuli (PI)

10/1/16 – 9/30/19

Phase 1 Image-Guided Dose-Escalation of SBRT for Localized Pancreatic Cancer

This project performs a phase 1 study of simultaneous integrated boost escalation to SBRT treatment of pancreatic cancer, along with DCE and DWI MR, PET, and histopathologic analyses studies genomic and radiomics biomarkers for triple negative breast cancer patients and correlates the radiogenomic markers with patient outcome.

Role:co-PI

\$332,607 direct annually, \$ 943,885 total direct cost, 3 years.

Submitted 2/2016

NCI R21

Yue (PI)

7/1/16 – 6/30/18

Theranostic Nanoparticle for Image-guided Radiotherapy of Breast Cancer

Evaluate and verify the Theranostic features of a novel trifunctional Theranostic nanoparticle platform that integrates fluorescence imaging capability, targeted receptor specificity for HER2/3, and platinum nanoparticles for enhanced radiation delivery.

Role: Consultant

\$270,000 direct annually, \$540,000 total direct cost, 2 years.

Submitted 3/2016

NCI R21

Yang (PI)

1/1/17 – 12/31/18

Slab Selective MRI Enhancement for 4D MR of Pancreatic Cancer

Evaluate the use of Slab-Selective Enhancement of vessels using 4D MR for pancreatic cancer.

Role: co-investigator. 3% effort

\$270,000 direct annually, \$540,000 total direct cost, 2 years

Optimization of High Dose Conformal Therapy

The major goal of this program project is the optimization of conformal therapy by studying automated optimization (Project 1), conformal and IMRT planning and delivery (Project 2), motion and setup uncertainty (Project 3) and clinical studies of dose escalation for brain, lung, prostate, head/neck and liver (Project 4).

Role: PI (PPG), Project (PI), Core (PI)

\$ 866,660 Annual Direct Costs, \$ 4,098,385 Total Direct Cost, 5 years

UM: Users Consortium

Fraass (Director)

11/15/93-11/14/95

UMPlan Users Consortium

The goal of this effort was to develop support systems for conformal therapy users of UMPlan.

Role: Director

\$180,000 Annual Direct Costs, \$360,000 Total Direct Cost, 2 years

NCI R01-CA-43200

Fraass (PI)

09/01/87 - 08/31/90

Integration/Evaluation of MRI-Assisted Treatment Planning

The goal of this project was to evaluate the use of MRI for treatment planning.

Role: PI

\$109,853 Annual Direct Costs, Total Direct Costs: \$330,000, 3 years

NCI N01-CM-67913

Fraass (PI)

08/01/86 - 07/31/89

Evaluation of High Energy Electron Beam Treatment Planning

The goal of this effort was to evaluate the use of 3-D Electron Beam treatment planning for clinical planning.

Role: PI

\$116,714 Annual Direct Costs, \$525,164 Total Direct Costs, 3 years

Teaching Activities:

National and International

1987 Faculty, American Association of Physicists in Medicine, Summer School.

1988 Faculty, American Association of Physicists in Medicine, Summer School.

1990 Faculty, American Association of Physicists in Medicine, Summer School.

1990 Refresher Course Faculty, American Society of Therapeutic Radiology and Oncology

1991 Refresher Course Faculty, American Society of Therapeutic Radiology and Oncology

1992 Refresher Course Faculty, Radiological Society of North America

1992 Refresher Course Faculty, American Society of Therapeutic Radiology and Oncology

1993 Co-Organizer and Faculty for the American College of Radiology and the Commission on Physics and Radiation Safety Symposium on Quality Assurance of Radiation Therapy Treatment Planning Systems, Washington DC, July 1993.

1993 Faculty, American Association of Medical Dosimetrists Annual Meeting

1993 Refresher Course Faculty, American Society of Therapeutic Radiology and Oncology

1994 Organizer and Faculty for the Conformal Therapy Focus Sessions, American Association of Physicists in Medicine Annual Meeting, July 1994

1994 Refresher Course Faculty, American Society of Therapeutic Radiology and Oncology

1994 Co-Organizer and Faculty for the Radiation Therapy Categorical Course on 3-D Treatment Planning, Annual Meeting of the Radiological Society of North America, November 1994

1995 Refresher Course Faculty, American Society of Therapeutic Radiology and Oncology

1995 Co-Organizer and Faculty for the Radiation Therapy Categorical Course on 3-D Treatment Planning, Annual Meeting of the Radiological Society of North America, November 1995

1996 Teaching Course on Conformal Therapy and Other Advanced Techniques, European Society Therapeutic Radiology and Oncology, Amsterdam, The Netherlands, June 1996

1996 Faculty, American Association in Physicists in Medicine, Summer School, June 1996.

1996 Refresher Course Faculty, American Society for Therapeutic Radiology and Oncology, October 1996

1997 Refresher Course Faculty, American Association in Physicists in Medicine, July 1997.

1997 Refresher Course Faculty, American Society for Therapeutic Radiology and Oncology, October 1997

1998 Teaching Course on Conformal Therapy and Other Advanced Techniques, European Society Therapeutic Radiology and Oncology, Amsterdam, The Netherlands, June 1998

- 1998 Refresher Course Faculty, American Association in Physicists in Medicine, August 1998.
- 1998 Refresher Course Faculty, American Society for Therapeutic Radiology and Oncology, October 1998
- 1998 Visiting Professor, Department of Radiation Oncology, Wake Forest University Medical School, November 1998
- 1999 Visiting Professor, Department of Radiation Oncology, Mayo Clinic, Rochester MN, March 1999.
- 1999 Teaching Course on Conformal Therapy and Other Advanced Techniques, European Society Therapeutic Radiology and Oncology, Amsterdam, The Netherlands, June 1999
- 1999 Invited Faculty, Swedish Medical Physics Society, Malmo, Sweden, October 1999
- 2000 Invited Faculty, International Symposium on CT Simulation and 3-D Treatment Planning, Vigo Spain, April 7-8, 2000
- 2000 Invited Faculty, First National Symposium on Modern Technology in Radiation Oncology, Riyadh, Saudi Arabia, April 19, 2000
- 2000 Invited Faculty, Univ. of Alabama/Univ. of Michigan Orlando Radiation Therapy Symposium, Orlando Florida, June 2000
- 2001 Teaching Course on Conformal Therapy and Other Advanced Techniques, European Society Therapeutic Radiology and Oncology, Amsterdam, The Netherlands, June 2001
- 2001 Invited Faculty, 6th International Symposium on Conformal Therapy and IMRT, Williamsburg, VA, June 2001
- 2001 Co-Chair, "Quality Assurance for IMRT", ESTRO Workshop on IMRT, European Society of Therapeutic Radiology and Oncology, Seville, Spain, September 2001
- 2001 Panel Moderator, "A Critical Evaluation of IMRT", American Society of Therapeutic Radiology and Oncology, San Francisco, CA, November 2001
- 2002 Teaching Course on Conformal Therapy and Other Advanced Techniques, European Society Therapeutic Radiology and Oncology, Amsterdam, The Netherlands, June 2002
- 2002 Therapy Review Course Faculty, American Association of Physicists in Medicine, Montreal, Quebec, Canada, July 2002
- 2003 Symposium Faculty, 7th International Symposium on 3-D Conformal Therapy and Intensity Modulated Radiation Therapy, San Francisco, CA, May 2003
- 2003 Teaching Course on Conformal Therapy and Other Advanced Techniques, European Society Therapeutic Radiology and Oncology, Amsterdam, The Netherlands, June 2003
- 2003 Panel Moderator, "Everything You Wanted to Know About Getting Research Money from NIH and NSF", American Association of Physicists in Medicine, San Diego, CA, August 2003
- 2003 Therapy Review Course Faculty, American Association of Physicists in Medicine, San Diego, CA, August 2003
- 2003 Panel Moderator: "Monte Carlo Calculations in the Clinic", American Society of Therapeutic Radiology and Oncology, Salt Lake City, UT, October 2003
- 2004 Teaching Course on Conformal Therapy and Other Advanced Techniques, European Society Therapeutic Radiology and Oncology, Amsterdam, The Netherlands, June 2004
- 2004 Therapy Review Course Faculty, American Association of Physicists in Medicine, Pittsburgh, PA, July 2004
- 2005 Therapy Review Course Faculty, American Association of Physicists in Medicine, Seattle, WA, July 2005
- 2005 Teaching Course on Conformal Therapy and Other Advanced Techniques, European Society Therapeutic Radiology and Oncology, Amsterdam, The Netherlands, June 2004
- 2006 Therapy Review Course Faculty, American Association of Physicists in Medicine, Orlando, FL, July 2006
- 2007 ASTRO-ACR-AAPM-NCI Symposium Faculty, "Quality Assurance of Radiation Therapy and the Challenges of Advanced Technologies", Dallas TX, February 2007
- 2007 Therapy Review Course Faculty, American Association of Physicists in Medicine, Minneapolis, MN, July 2007
- 2008 Therapy Review Course Faculty, American Association of Physicists in Medicine, Houston TX, July 2008
- 2009 Therapy Review Course Faculty, American Association of Physicists in Medicine, Anaheim CA, July 2009
- 2009 George TY Chen Visiting Professor of Medical Physics, Massachusetts General Hospital and Harvard Medical School, Boston MA, December 2009
- 2010 Canadian Organization of Medical Physics Winter School Faculty, Banff, Alberta, Canada, January 2010

- 2010 Therapy Review Course Faculty, American Association of Physicists in Medicine, Philadelphia PA, July 2010
- 2011 Canadian Organization of Medical Physics Winter School Faculty, Mont Tremblant, Quebec, Canada, January 2011
- 2011 Therapy Review Course Faculty, American Association of Physicists in Medicine, Vancouver, BC, Canada, July 2011
- 2012 Therapy Review Course Faculty, American Association of Physicists in Medicine, Charlotte NC, July 2012
- 2013 Therapy Review Course Faculty, American Association of Physicists in Medicine, Indianapolis, IN, August 2013
- 2014 Therapy Review Course Faculty, American Association of Physicists in Medicine, Austin, TX, July 2014
- 2014 Visiting Professor, University of Chicago, Chicago IL, 2014.
- 2015 Therapy Review Course Faculty, American Association of Physicists in Medicine, Anaheim, CA, July 2015
- 2016 Therapy Review Course Faculty, American Association of Physicists in Medicine, Washington DC, July 2016

Cedars-Sinai Medical Center

- 2012 Supervision of summer internship for MS student: Adria Vidivic (Duke University)
- 2012 -- Supervision of UCLA Biomedical Physics Graduate student Jennifer Steers
- 2013 - 2015 Director, Radiation Oncology Physics Course, Department of Radiation Oncology

University of California Los Angeles

- 2013 -- Thesis advisor, Biomedical Physics Graduate student Jennifer Steers

University of Michigan

- 1984-2011 Lecturer in Radiation Therapy Physics Course, Department of Radiation Oncology
- 1987-1989 Supervision of Postdoctoral research: Larry Antonuk, Ph.D.
- 1989-1991 Supervision of Postdoctoral research: Robin Stern, Ph.D.
- 1993-1999 Ph.D. Thesis Supervisor, Jean Moran, Department of Nuclear Engineering and School of Public Health
- 1994-1996 Supervision of postdoctoral research: Moyed Miften, Ph.D.
- 1995 Supervision of undergraduate research: Susan Volkman
- 1996-1998 Supervision of postdoctoral research: Moorthy Muthuswamy, Ph.D.
- 1999-2001 Supervision of postdoctoral research: Nesrin Dogan, Ph.D.
- 1997-1999 Supervision of postdoctoral research: Jim Schewe, Ph.D.
- 1997 Supervision of undergraduate research: James Baciak
- 1997-1999 Supervision of visiting Professor: Annette Wygoda, PhD.
- 1999-2003 Ph.D. Thesis Committee, Ken Jee, Department of Physics
- 2000-2002 Supervision of undergraduate research: Martha Coselmon, Department of Nuclear Engineering and Radiological Sciences
- 2000-2001 Supervision of Resident research year: Edie Krueger MD
- 2000-2001 Supervision of undergraduate research: Jeff Radawski, Department of Nuclear Engineering and Radiological Sciences
- 2001-2003 Postdoctoral research: Paul Charland, Ph.D.
- 2002-2006 Ph.D. Thesis Committee, Amit Sawant, Department of BioEngineering
- 2002-2004 Supervision of postdoctoral research: Ken Forster, Ph.D.
- 2003-2006 Ph.D. Thesis Committee, Neelam Tyagi, Department of Nuclear Engineering and Radiological Sciences
- 2003-2007 Ph.D. Thesis Supervisor, Martha (Coselmon) Matuszak, Department of Nuclear Engineering and Radiological Sciences
- 2006-2007 Medical Resident Research Year Mentor – Irwin Lee, MD, Department of Radiation Oncology
- 2008 Graduate Student Research supervision – Chris Tien, Department of Nuclear Engineering and Radiological Sciences
- 2009--2011 Graduate Student Research co-supervision – Jihun Kim, Department of Mechanical Engineering

2009--2011 Undergraduate Student Research supervision - Jennifer Steers, Department of Nuclear Engineering and Radiological Sciences
2009-2011 Research Supervision, Joel Wilkie, Department of Radiation Oncology,
2010-2011 Graduate Student Research co-supervision – Troy Long, Department of Industrial Operations Engineering

National Institutes of Health

1981-84 Course Co-director, Radiation Physics, NIH

Karolinska University, Stockholm

1991-1993 Supervision of research: Ansi Gerhardssen

Netherlands Cancer Institute

1994 3-D Treatment Planning Lecture Series

2005 Optimization and IMRT: Residents IMRT Classes

Erasmus University, Rotterdam

1997 Supervision of Ph.D. student Maarten Dirkx

2000 Ph.D. Committee for Maarten Dirkx

University of Goteborg, Sweden

2001 Supervision of Ph.D. Student Anna Samuelsson

Invited Lectures/Presentations:

1. "Field matching considerations in radiotherapy." The First Annual, Region IV, Radiation Therapy Dosimetry Workshop, American Association of Medical Dosimetrists. New Haven, Connecticut. March 22-23, 1985.
2. "Practical implications of 3-D treatment planning." American Association of Medical Dosimetrists. Chicago, Illinois, 1986.
3. "3-D treatment planning," Massachusetts General Hospital, Boston MA, September 1986.
4. "3-D treatment planning," University of California, San Francisco CA, November 1986.
5. "3-D treatment planning," Lawrence Berkeley Laboratory, Berkeley CA, November 1986.
6. "Practical implications of three-dimensional radiation therapy treatment planning," 72nd Scientific Assembly and Annual Meeting of the Radiological Society of North America, November 1986.
7. "3-D treatment planning: Toward use of the racetrack microton," Danish/Swedish Medical Physics Society, Copenhagen, Denmark, May 1987.
8. "Image communication and image analysis needs in radiation therapy." American Association of Physicists in Medicine Summer School, Ann Arbor, MI, July 1987.
9. "A critical look at MRI for treatment planning," Symposium at 1987 Annual Meeting of American Association of Physicists in Medicine, Detroit, Michigan, July 1987.
10. "3-D treatment planning for breast cancer." 8th Annual Current Approaches to Radiation Oncology, Biology and Physics, San Francisco, CA, March 1988.
11. "Three dimensional treatment planning." Current Progress in Combined Modalities, U.S. Japan Cooperative Cancer Research Program, San Francisco, CA, March 1988.
12. "3-D treatment planning." Radiation Oncology Visiting Professor Seminar Series, University of Arizona, Tucson, AZ, April 1988.
13. "3-D treatment planning." University of Lund Hospital, Lund, Sweden, June 1988.
14. "Edge/octree photon calculation model." Karolinska Hospital, University of Stockholm, Stockholm, Sweden, June 1988.
15. "3-D treatment planning: Impact on radiotherapy." University of Utah, Salt Lake City, Utah, July 1988.

16. "Radiation therapy treatment planning." Computers in Medical Physics, 1988 Summer School, American Association of Physicists in Medicine, Austin, TX, August 1988.
17. "Computerized fabrication of beam-shaping blocks." Computers in Medical Physics, 1988 Summer School, American Association of Physicists in Medicine, Austin, TX, August 1988.
18. "Future trends in hardware and software for radiation therapy." Computers in Medical Physics, 1988 Summer School, American Association of Physicists in Medicine, Austin, TX, August 1988.
19. "Tissue heterogeneities effects for electron beams." Electron Beam Clinical Dosimetry Symposium, American Society for Therapeutic Radiology and Oncology, New Orleans, LA, October 1988.
20. "Use of MRI for treatment planning." Annual Meeting, Radiological Society of North America, Chicago, IL, November 1988.
21. "3-D treatment planning." Invited talk at Yale University, April 27, 1989.
22. "Electron contract working group summary" ISCRO 3-D Treatment Planning Meeting, Houston, Texas, March 1990.
23. "Clinical application of 3-D treatment planning". AAPM Summer School, Lawrence, Kansas, July 1990.
24. "A unified system for computer-controlled conformal therapy". 32nd AAPM Annual Meeting, St. Louis, Missouri, July, 1990.
25. "Computer-controlled radiation therapy and 3-D treatment planning". ASTRO Refresher Course, ASTRO Annual Meeting, Miami Beach, Florida, October 1990.
26. "Clinical 3-D treatment planning." Invited talk at Henry Ford Hospital, Grand Rounds, Detroit, Michigan, November 1990.
27. "External beam treatment and treatment planning for breast cancer". American College of Medical Physics Symposium, Stowe, Vermont, June 1991.
28. "Testing the utility of clinical 3-D treatment planning." World Congress on Medical and Biomedical Engineering, Kyoto, Japan, July 1991.
29. "Analysis and performance of the edge/octree photon calculation model." World Congress on Medical and Biomedical Engineering, Kyoto, Japan, July 1991.
30. "An approach to software for computer-controlled conformal therapy." World Congress on Medical and Biomedical Engineering, Kyoto, Japan, July 1991.
31. "Computer-controlled radiation therapy and 3-D treatment planning". Refresher Course at the American Society of Therapeutic Radiology and Oncology Annual Meeting, Washington D.C., November 1991.
32. "Computer-controlled conformal therapy with the racetrack microtron", US-Japan Cooperative Cancer Research Program, Radiation Oncology, Ann Arbor, Michigan, November 1991.
33. "Computerized treatment delivery". The Radiological and Medical Physics Society Spring Symposium in New York, New York, April 1992.
34. "Computer-controlled radiation therapy and 3-D treatment planning". Refresher course at the American Society of Therapeutic Radiological Oncology Annual Meeting, San Diego California, November 1992.
35. "Image-guided three-dimensional treatment planning". Refresher course at the Annual Radiological Society of North America Meeting in Chicago, Illinois, December 1992.
36. "Practical consideration in the implementation of 3-D treatment planning". 13th Annual Current Approaches to Radiation Oncology, Biology and Physics, San Francisco, California, March 1993.
37. "3-D treatment planning and treatment delivery for abdominal tumors: Dose escalation and normal tissue complications". 13th Annual Current Approaches to Radiation Oncology, Biology and Physics, San Francisco, California, March 1993.
38. "Treatment planning quality assurance", First International 3D Conformal Radiotherapy Symposium, St. Louis Missouri, April 1993.
39. "Computer control for conformal therapy", First International 3D Conformal Radiotherapy Symposium, St. Louis, Missouri, April 1993.

40. "3-D Treatment planning and conformal therapy". Netherlands Cancer Institute, Amsterdam, the Netherlands, May 1993.
41. "3-D Treatment planning and conformal therapy". American Association of Medical Dosimetrists, Atlanta, Georgia, June 1993.
42. "Computer control for conformal therapy", Varian Oncology Systems, Palo Alto California, June 1993.
43. "Dose calculation QA for 3-D planning: Dose distributions, monitor units and dose delivery". American College of Radiology Symposium on Quality Assurance of Radiation Therapy Treatment Planning Systems, Washington DC, August 1993.
44. "Integration of QA in the clinical planning process". American College of Radiology Symposium on Quality Assurance of Radiation Therapy Treatment Planning Systems, Washington DC, August 1993.
45. "Computer-controlled radiation therapy and 3-D treatment planning". Refresher course at the American Society of Therapeutic Radiological Oncology Annual Meeting, New Orleans, Louisiana, October 1993.
46. "Conformal therapy", Netherlands Cancer Institute, Amsterdam, the Netherlands, January 1994.
47. "Computer-controlled conformal therapy", Dutch Clinical Physics Society, Arnhem, the Netherlands, April 1994.
48. "3-D dosimetric quality assurance for treatment planning". Netherlands Cancer Institute, Physics Research and Development Seminar, Amsterdam, The Netherlands, April 1994.
49. "Conformal therapy", Centre Benard, Lyon, France, May 1994.
50. "3-D treatment planning and computer-controlled conformal therapy", Daniel van Hoek Cancer Clinic, Rotterdam, the Netherlands, May 1994.
51. "U-MPlan Photon Dose Calculation Algorithm", Netherlands Cancer Institute, Physics Research and Development Seminar, Amsterdam, the Netherlands, May 1994.
52. "Computer-controlled conformal therapy". European Symposium on CT-Based Simulation in Radiotherapy, Ghent, Belgium, June 1994.
53. "Electronic chart for conformal therapy", Dutch Clinical Physics Society, Amsterdam, the Netherlands, July 1994.
54. "Computer-controlled conformal therapy and multileaf collimation", Netherlands Cancer Institute, Radiation Oncology Seminar, Amsterdam, the Netherlands, July 1994.
55. "3-D treatment planning for conformal therapy". American Association of Physicists in Medicine, Anaheim, California, July 1994.
56. "Quality assurance for computer-controlled treatment delivery". American Association of Physicists in Medicine, Anaheim, California, July 1994.
57. "3-D treatment planning for conformal therapy". 13th European Society for Therapeutic Radiology and Oncology, Granada, Spain, September 1994.
58. "3-D conformal radiation therapy - dose delivery". American Society for Therapeutic Radiology and Oncology, San Francisco, California, October 1994.
59. "Computer controlled 3-D conformal delivery systems". Radiological Society of North America, Chicago, Illinois, November 1994.
60. "The clinical 3-D planning process". Radiological Society of North America, Chicago, Illinois, November-December 1994.
61. "Conformal radiotherapy: Advances in technique and technology", 30th Annual San Francisco Cancer Symposium, San Francisco, California, March, 1995.
62. "Clinical use of MLC for prostate cancer", 30th Annual San Francisco Cancer Symposium, San Francisco, California, March, 1995.
63. "3-D conformal radiation therapy - computer-controlled dose delivery". American Society for Therapeutic Radiology and Oncology, San Francisco, California, October 1995.

64. "Computer controlled 3-D conformal delivery systems". Radiological Society of North America, Chicago, Illinois, November 1995.
65. "The clinical 3-D planning process". Radiological Society of North America, Chicago, Illinois, November-December 1995.
66. "High-Tech Radiotherapy is Cost Effective", Second Annual MSTR/AAPM Chapter Debate, Novi, Michigan, March 1996.
67. "Issues on the clinical implementation of computer controlled radiotherapy", European Society for Therapeutic Radiology and Oncology, Amsterdam, The Netherlands, June, 1996.
68. "QA of 3-D treatment planning systems", European Society for Therapeutic Radiology and Oncology, Amsterdam, The Netherlands, June, 1996.
69. "Clinical results of conformal radiotherapy studies at the University of Michigan", European Society for Therapeutic Radiology and Oncology, Amsterdam, The Netherlands, June, 1996.
70. "Quality assurance for 3-D treatment planning", Teletherapy: Present and Future, Faculty, American Association in Physicists in Medicine, Summer School, University of British Columbia, Vancouver, BC, Canada, June 1996.
71. "3-D Conformal Radiation Therapy - Part II: Computer-Controlled Treatment Delivery", American Society for Therapeutic Radiology and Oncology, Los Angeles, California, October 1996.
72. "Computer-Controlled and Intensity Modulated Treatment Delivery", session organizer and speaker, National Cancer Institute Workshop on Conformal Therapy, Reston VA March 1997.
73. "Clinical Use of Intensity Modulated Radiotherapy Using Multi-Segment Treatment Delivery Techniques", Refresher Course, American Association of Physicists in Medicine, Milwaukee, WI July 1997.
74. "Quality assurance for computer-controlled conformal therapy", World Congress on Medical Physics and Biomedical Engineering, Nice, France, September 1997.
75. "Clinical use of multi-segment intensity modulation", European Conference on Cancer and Oncology, Hamburg Germany, September 1997.
76. "Dose Escalation and IMRT at the University of Michigan", Netherlands Cancer Institute, Amsterdam, the Netherlands, September 1997
77. "3-D Conformal Radiation Therapy - Part II: Computer-Controlled Treatment Delivery", American Society for Therapeutic Radiology and Oncology, Orlando, Florida, October 1997.
78. "Computer-controlled Conformal Radiotherapy", Teaching Course on Conformal Therapy, European Society for Therapeutic Radiology and Oncology, Amsterdam, The Netherlands, June, 1998.
79. "Quality Assurance for 3-D Treatment Planning", Teaching Course on Conformal Therapy, European Society for Therapeutic Radiology and Oncology, Amsterdam, The Netherlands, June, 1998.
80. "Conformal Therapy Dose Escalation Studies: Clinical Results", Teaching Course on Conformal Therapy, European Society for Therapeutic Radiology and Oncology, Amsterdam, The Netherlands, June, 1998.
81. "TG_53: Quality Assurance for Clinical Radiation Therapy Treatment Planning", Refresher Course, American Association of Physicists in Medicine, San Antonio, Texas, August 1998..
82. "Clinical Conformal Therapy and Intensity Modulated Radiotherapy", Massachusetts General Hospital, Boston MA, August 1998.
83. "Quality assurance for computer-controlled conformal therapy", European Society of Therapeutic Radiology and Oncology, Edinburgh, Scotland, September 1998.
84. "3-D Conformal Radiation Therapy - Part II: Computer-Controlled Treatment Delivery", American Society for Therapeutic Radiology and Oncology, Phoenix, Arizona, October 1998.
85. "Clinical Dose Escalation Studies", Wake Forest University School of Medicine, Winston-Salem, North Carolina, November 1998.
86. "IMRT and Computer-Controlled Conformal Therapy Treatment Delivery", Wake Forest University School of Medicine, Winston-Salem, North Carolina, November 1998.

87. "Clinical Conformal Therapy: Dose Escalation, Optimization and IMRT", Mayo Clinic, Rochester MN, March 1999.
88. "Conformal Therapy: Electrons, Optimization and IMRT", Varian Oncology Systems, Palo Alto CA, March 1999.
89. "Optimization of Segmental IMRT", European Society for Therapeutic Radiology and Oncology, Gottingen, Germany, April 1999.
90. "Treatment Planning Quality Assurance, TG 53", ESTRO Workshop on Quality Assurance for Treatment Planning, Gottingen, Germany, April 1999.
91. "Optimization for Segmental and Beamlet IMRT for Conformal Therapy", Netherlands Cancer Institute, Amsterdam, the Netherlands, April 1999.
92. "Computer-controlled Conformal Radiotherapy", Teaching Course on Conformal Therapy, European Society for Therapeutic Radiology and Oncology, Amsterdam, The Netherlands, June, 1999.
93. "Quality Assurance for 3-D Treatment Planning", Teaching Course on Conformal Therapy, European Society for Therapeutic Radiology and Oncology, Amsterdam, The Netherlands, June, 1999.
94. "Conformal Therapy Dose Escalation Studies: Clinical Results", Teaching Course on Conformal Therapy, European Society for Therapeutic Radiology and Oncology, Amsterdam, The Netherlands, June, 1999.
95. "Clinical Use and Optimization of Segmental IMRT", Regional Meeting of the American Association of Medical Dosimetrists, Ann Arbor, MI, June 1999.
96. "Conformal Plan Optimization: Inverse and Forward Planning for Full and Segmental IMRT", American Association of Physicists in Medicine, Nashville, TN, July 1999.
97. "Segmental IMRT", Swedish Medical Physics Society, Malmo, Sweden, October 1999.
98. "Dose Escalation and Optimization for Conformal Therapy", Rigshospitalet, Copenhagen, Denmark, October 1999.
99. "Computer-Controlled Systems", International Symposium on CT Simulation and 3-D Treatment Planning, Vigo Spain, April 7-8, 2000
100. "Quality Control in Conformal Therapy", International Symposium on CT Simulation and 3-D Treatment Planning, Vigo Spain, April 7-8, 2000
101. "Conformal Therapy at the University of Michigan", International Symposium on CT Simulation and 3-D Treatment Planning, Vigo Spain, April 7-8, 2000
102. "Dose Escalation using 3-D Conformal Therapy", First National Symposium on Modern Technology in Radiation Oncology, Najran, Saudi Arabia, April 19, 2000
103. "Advanced Treatment Planning for Conformal and Intensity Modulated Radiation Therapy", Radiotherapy Institute of Limburg, Heerlen, the Netherlands, May 2000.
104. "Treatment Planning for Conformal Therapy", Univ. of Alabama/Univ. of Michigan Orlando Radiation Therapy Symposium, Orlando Florida, June 2000.
105. "IMRT and Conformal Plan Comparisons", Netherlands Cancer Institute, Amsterdam, December 7, 2000.
106. "Comparing Conformal Therapy Techniques" , Dutch Clinical Physics Society, Rotterdam, December 8, 2000.
107. "Computer-controlled Conformal Radiotherapy", Teaching Course on Conformal Therapy, European Society for Therapeutic Radiology and Oncology, Amsterdam, The Netherlands, June, 2001.
108. "Quality Assurance for 3-D Treatment Planning", Teaching Course on Conformal Therapy, European Society for Therapeutic Radiology and Oncology, Amsterdam, The Netherlands, June, 2001.
109. "Conformal Therapy Dose Escalation Studies: Clinical Results", Teaching Course on Conformal Therapy, European Society for Therapeutic Radiology and Oncology, Amsterdam, The Netherlands, June, 2001.

110. "IMRT: Roles of Optimization and Delivery Techniques", 6th International Symposium on Conformal Therapy and IMRT, Williamsburg, VA, June 2001
111. "A Holistic Approach to Quality Assurance for IMRT", ESTRO IMRT Workshop, European Society for Therapeutic Radiology and Oncology, Seville Spain, September 2001
112. "Optimization and IMRT: Performing Valid Comparisons Between Techniques." ESTRO, European Society for Therapeutic Radiology and Oncology, Seville Spain, September 2001.
113. "Comparisons of Breast Treatment Techniques", American Society of Therapeutic Radiology and Oncology, San Francisco, CA, November 2001.
114. "Is That IMRT Plan Really Better: Quantitative Plan Evaluation Techniques", American Society of Therapeutic Radiology and Oncology, San Francisco, San Francisco, CA, November 2001.
115. "Target Localization with Markers", Varian RT 2010, Scottsdale AZ January 2002
116. "Plan Comparisons for Optimization", National Cancer Institute – National Science Foundation Workshop, Washington DC, February 2002
117. "Plan Comparisons: How Will You Know if Tomotherapy Is Really Better ?" , Grand Rounds, London Regional Cancer Center, London, Ont, Canada, May 2002.
118. "Computer-controlled Conformal Radiotherapy", Teaching Course on Conformal Therapy, European Society for Therapeutic Radiology and Oncology, Amsterdam, The Netherlands, June, 2002.
119. "Quality Assurance for 3-D Treatment Planning", Teaching Course on Conformal Therapy, European Society for Therapeutic Radiology and Oncology, Amsterdam, The Netherlands, June, 2002.
120. "Conformal Therapy Dose Escalation Studies: Clinical Results", Teaching Course on Conformal Therapy, European Society for Therapeutic Radiology and Oncology, Amsterdam, The Netherlands, June, 2002.
121. "Computer-Controlled Treatment Delivery", Therapy Review Course, American Association of Physicists in Medicine, Montreal Canada, July 2002
122. "Dosimetric Verification Needs for Conformal Therapy", American Association of Physicists in Medicine, Montreal Canada, July 2002
123. "Fundamentals of Precision Conformal Therapy", 7th International Symposium on 3-D Conformal Therapy and Intensity Modulated Radiation Therapy, San Francisco, CA, May 2003
124. "Computer-controlled Conformal Radiotherapy", Teaching Course on Conformal Therapy, European Society for Therapeutic Radiology and Oncology, Amsterdam, The Netherlands, June, 2003.
125. "Quality Assurance for 3-D Treatment Planning", Teaching Course on Conformal Therapy, European Society for Therapeutic Radiology and Oncology, Amsterdam, The Netherlands, June, 2003.
126. "Conformal Therapy Dose Escalation Studies: Clinical Results", Teaching Course on Conformal Therapy, European Society for Therapeutic Radiology and Oncology, Amsterdam, The Netherlands, June, 2003
127. "Computer-Controlled Treatment Delivery", Therapy Review Course Faculty, American Association of Physicists in Medicine, San Diego, CA, August 2003
128. "Margins, Errors, and Plan Optimization", European Society for Therapeutic Radiology and Oncology, Geneva, Switzerland, September 2003.
129. "Optimization Incorporating Geometric Uncertainties", Workshop on Intensity Modulated Radiation Therapy, European Society for Therapeutic Radiology and Oncology, Geneva, Switzerland, September 2003.
130. "Limiting Maximum Beamlet Intensity", Workshop on Intensity Modulated Radiation Therapy, European Society for Therapeutic Radiology and Oncology, Geneva, Switzerland, September 2003.
131. "Margins, Setup, Motion, and Plan Optimization", Department of Radiation Oncology, University of Utrecht, the Netherlands, October 2003

132. "Plan Optimization, Motion, and Margins", Varian Medical Systems, Helsinki, Finland, November 2003
133. "Computer-controlled Conformal Radiotherapy and IMRT", Teaching Course on Conformal Therapy, European Society for Therapeutic Radiology and Oncology, Amsterdam, The Netherlands, June, 2004.
134. "Quality Assurance for 3-D Treatment Planning and IMRT", Teaching Course on Conformal Therapy, European Society for Therapeutic Radiology and Oncology, Amsterdam, The Netherlands, June, 2004.
135. "Conformal Therapy Dose Escalation Studies: Clinical Results", Teaching Course on Conformal Therapy, European Society for Therapeutic Radiology and Oncology, Amsterdam, The Netherlands, June, 2004
136. "Computer-Controlled Treatment Delivery", Therapy Review Course Faculty, American Association of Physicists in Medicine, Pittsburg, PA, July 2004
137. "Optimization Research", Netherlands Cancer Institute, Amsterdam, the Netherlands, February 2005
138. "IMRT and Optimization Research for Use in Clinical Studies", The Royal Marsden Cancer Hospital, Sutton, England, UK, April 2005
139. "Integrating IMRT and Motion Research into Clinical Research", German Cancer Research Center (DKFZ), Heidelberg, Germany, June 2005.
140. "Dealing with Respiratory Motion: Use of Active Breathing Control", BA Fraass, J Balter, RK Ten Haken, L Dawson. Dutch Clinical Physics Society Annual Meeting, Arnhem, the Netherlands, June 2005
141. "Computer-controlled Conformal Radiotherapy and IMRT", Teaching Course on Conformal Therapy, European Society for Therapeutic Radiology and Oncology, Amsterdam, The Netherlands, July, 2005.
142. "Quality Assurance for 3-D Treatment Planning and IMRT", Teaching Course on Conformal Therapy, European Society for Therapeutic Radiology and Oncology, Amsterdam, The Netherlands, July, 2005.
143. "Conformal Therapy Dose Escalation Studies: Clinical Results", Teaching Course on Conformal Therapy, European Society for Therapeutic Radiology and Oncology, Amsterdam, The Netherlands, July, 2005
144. "IMRT Optimization and Motion Research for Clinical Studies", for the James A. Purdy Medical Physics Lectureship, Washington University St. Louis Department of Radiation Oncology, St. Louis, MO, May 2006.
145. "Computer-Controlled Treatment Delivery", Therapy Review Course, American Association of Physicists in Medicine, July 2005
146. "QA Issues for Computer-Controlled Treatment Delivery: This Isn't Your Old R/V System Any More!", ASTRO Symposium on Quality Assurance of Radiation Therapy and the Challenges of Advanced Technologies, Dallas-Fort Worth, TX, February 2007.
147. "Errors in Radiotherapy: Motivation for Development of New Radiotherapy Quality Assurance Paradigms", ASTRO Symposium on Quality Assurance of Radiation Therapy and the Challenges of Advanced Technologies, Dallas-Fort Worth, TX, February 2007.
148. "Current Issues for the Use of Computers in Radiotherapy, Present: Redefining and Rearranging the Building Blocks of the Radiotherapy Process", Keynote Address for the International Conference on Computers in Radiotherapy, Toronto, Ontario, Canada, June 2007
149. "IMRT and Computer-Controlled Treatment Delivery", Therapy Review Course, American Association of Physicists in Medicine, July 2007
150. "Improving Cancer Treatment by Applying Optimization and Process Improvement Methods to Radiotherapy Treatment Planning and Delivery", Industrial Operations Engineering Symposium, Department of Industrial Operations Engineering, University of Michigan, April 2008.
151. "Designing and Implementing Clinical Studies Involving New Technology", American Association of Physicists in Medicine Annual Meeting, Houston TX, July 2008.

152. "IMRT and Computer-Controlled Treatment Delivery", Therapy Review Course Faculty, American Association of Physicists in Medicine, July 2008
153. "IMRT and Computer-Controlled Treatment Delivery", Therapy Review Course, American Association of Physicists in Medicine, Anaheim CA, July 2009
154. "Can We Integrate Studies of New Technology(s) with Clinical Research?". George TY Chen Lecture in Medical Physics, Massachusetts General Hospital, Boston MA, December 2009.
155. "Integrating Optimization and Motion Research into Clinical Studies", Medical Physics Seminar, Massachusetts General Hospital, Boston MA, December 2009.
156. "QA Issues for Computer-Controlled Radiation Therapy", Canadian Winter School of Medical Physics, Banff, Alberta, Canada, January 24-28, 2010.
157. "Avoiding Errors in the IMRT Planning/Delivery Process", B.A. Fraass & J.W. Williamson, Canadian Winter School of Medical Physics, Banff, Alberta, Canada, January 24-28, 2010.
158. "ASTRO/ACR/AAPM QA White Papers", at "Safety in Radiation Therapy – A Call to Action", organized by AAPM and ASTRO, Miami, FL, June 24-25, 2010.
159. "IMRT and Computer-Controlled Treatment Delivery", Therapy Review Course, American Association of Physicists in Medicine, Philadelphia PA, July 2010.
160. "Improving Quality Assurance for Paperless/Electronic Treatment Delivery Systems", American Association of Physicists in Medicine, Philadelphia PA, July 2010.
161. "Safety and QA for IMRT and Computer-Controlled Radiation Therapy", Canadian Winter School of Medical Physics, Mont Tremblant, Quebec, Canada, January 2011.
162. "What Are We Doing Now To Address Patient Safety", QA and Dosimetry Symposium, Orlando FL, February 2011
163. "Safety Considerations for Intensity-Modulated Radiation Therapy", Conference on Radiation Control Program Directors Annual Meeting, Austin TX May 2011
164. "Overview of Safety Improvement Efforts by AAPM, ASTRO, and other Groups", AAPM Annual Meeting, Vancouver, BC, Canada, July-August 2011
165. "IMRT and Computer-Controlled Treatment Delivery", Therapy Review Course, American Association of Physicists in Medicine, Vancouver BC, Canada, July 2011.
166. "Impact of Complexity and Computer Control on Errors in Radiation Therapy", Symposium on the International System of Radiological Protection, International Committee on Radiation Protection, Washington DC, October 2011.
167. "What Have We Learned About Errors and Safety in Radiation Oncology?". AAPM Southern California Chapter MidWinter Symposium, Universal Studios, California, January 2012
168. "Principles of Quality and Safety in Radiation Therapy", SouthEastern AAPM Symposium on Quality and Safety, April 18-20, 2012, Atlanta GA.
169. "Multidisciplinary Collaborations in Medical Physics", American Association of Physicists in Medicine Annual Meeting, Charlotte NC, July 2012
170. "Computer Controlled Treatment Delivery: History, Issues and Safety". Therapy Review Course, American Association of Physicists in Medicine, Charlotte NC, July 2012.
171. "Incorporating Modern Quality and Safety Considerations into the Radiation Oncology Planning/Delivery Process: Needs and Examples", American Society of Radiation Oncology Annual Meeting, Boston MA, October 2012. Invited but cancelled.
172. "Computer Controlled Treatment Delivery: History, Issues and Safety". Therapy Review Course, American Association of Physicists in Medicine, Indianapolis IN, August 2013.
173. "What Have We Learned about Errors and Safety in Modern Radiotherapy?" International Conference on Medical Physics 2013, Brighton UK, September 2013.
174. "Can We Improve Safety and Quality of Sophisticated Modern Radiotherapy?". International Conference on Medical Physics 2013, Brighton UK, September 2013.

175. "Incorporating Modern Quality and Safety Considerations into the Radiation Oncology Planning/Delivery Process: Needs and Examples", American Society of Radiation Oncology Annual Meeting, Atlanta GA, September 2013.
176. "Radiation Oncology Safety Stakeholders Initiative: A Novel and Ad Hoc Approach to Safety Improvements", American Association of Physicists in Medicine Spring Clinical Meeting, Denver CO, April 2014.
177. "Computer Controlled Treatment Delivery: History, Issues and Safety". Therapy Review Course, American Association of Physicists in Medicine, Austin TX, July 2014.
178. "More than Pretty Pictures: 3D Treatment Planning and Conformal Therapy" American Association of Physicists in Medicine, Austin TX, July 2014.
179. "Incorporating Modern Quality and Safety Considerations into the Radiation Oncology Planning/Delivery Process: Needs and Examples", American Society of Radiation Oncology Annual Meeting, San Francisco, CA, September 2014.
180. "Analyzing Safety in Radiotherapy: Do Complexity, Automation and Process Make a Difference?" Department of Radiation Oncology, University of Chicago, Chicago IL, November 2014.
181. "Can We Improve Safety and Quality While Implementing and Studying Personalized (Adaptive) Radiation Therapy?", Hideo Dale Kubo Memorial Lecture, UC Davis Comprehensive Cancer Center Department of Radiation Oncology, Davis CA, May 2015
182. "Radiation Treatment Planning Systems", World Congress on Medical Physics and Biomedical Engineering, Toronto Canada, June 2015.
183. "RadOnc Treatment Management Systems and the Paperless Treatment Process", World Congress on Medical Physics and Biomedical Engineering, Toronto Canada, June 2015.
184. "Computer Controlled Treatment Delivery: History, Issues and Safety". Therapy Review Course, American Association of Physicists in Medicine, Anaheim, CA July 2015.
185. "The Role of Program Project Grants in Study of 3D Conformal Therapy, Dose Escalation and Motion Management", American Association of Physicists in Medicine Annual Meeting, Anaheim CA, July 2015
186. "ASTRO Safety White Papers", American Society of Radiation Oncology Annual Meeting, San Antonio TX, October 2015.
187. "Recent Safety Efforts vs. Software-driven Radiation Oncology Planning and Treatment: Who's Winning?" 18th International Conference on the use of Computers in Radiotherapy, London UK, June 2016.
188. "Safety, Quality Assurance, and Process for Modern Treatment Delivery". Therapy Review Course, American Association of Physicists in Medicine, Washington DC, August 2016.
189. "Jan van de Geijn: 3-D Treatment Planning Before You Were Born". American Association of Physicists in Medicine Annual Meeting, Washington DC, August 2016.
190. "Assessing Risk in Radiotherapy: Publications, RO-ILS, and Experience". Certificate Course on "Application of Risk Analysis Methods to Radiotherapy Quality Management, TG 100 Recommendations, American Association of Physicists in Medicine Annual Meeting, Washington DC, August 2016.
191. "Standardizing Prescriptions to Improve Patient Safety". American Association of Physicists in Medicine Annual Meeting, Denver CO, July 2017.

BIBLIOGRAPHY/PUBLICATIONS:

RESEARCH PAPERS (PEER REVIEWED)

A. RESEARCH PAPERS - PEER REVIEWED

1. **Fraass BA**, Heald SM, Simmons RO: Growth of several quantum crystals: CD₄, 4He and 3He. *J Cryst Growth*, 42:370, 1977.
2. Baer DR, **Fraass BA**, Riehl DH, Simmons RO: Lattice parameters and thermal expansion of solid CD₄. *J Chem Phys*, 68:1411, 1978.
3. Gates JV, Granfors PR, **Fraass BA**, Simmons RO: The structure transition in hydrogen below 1 K. *J de Physique*, 39:C6-103 (Fifteenth International Conference on Low Temperature Physics, Grenoble, France, 1978).
4. Gates JV, Granfors PR, **Fraass BA**, Simmons RO: X-ray study of the crystallographic transformation in hydrogen below 1.5 K. *Phys Rev*, B19:3667, 1979.
5. **Fraass BA**, Simmons RO: X-ray scattering - a new technique to study phase separation in 3He - 4He solids. *Physics*, 107B:277, 1981.
6. Kinsella TJ, **Fraass BA**, Glatstein E: Late effects of radiation therapy in the treatment of Hodgkin's disease. *Cancer Treatment Reports*, 66:991-1001, 1982. PubMed PMID: 6804091
7. van de Geijn J, Harrington F, **Fraass BA**, Glatstein E: A graticule for evaluation of megavolt x-ray port films. *Int J Rad Onc Biol Phys*, 8:1999-2000, 1982. PubMed PMID: 6818197
8. **Fraass BA**, Roberson PL, Glatstein E: Whole skin electron treatment: Patient skin dose distribution. *Radiology*, 146:811-814, 1983. PubMed PMID: 6828698
9. Lichter AS, **Fraass BA**, van de Geijn, Padikal TN: A technique for field matching in primary breast irradiation. *Int J Rad Onc Biol Phys*, 9:263-270, 1983. PubMed PMID: 6833028
10. **Fraass BA**, Tepper JE, Glatstein E, van de Geijn J: Clinical use of a match-line wedge for adjacent megavoltage radiation field matching. *Int J Rad Onc Biol Phys*, 9:209-216, 1983. PubMed PMID: 6403488
11. Kinsella TJ, Loeffler JS, **Fraass BA**, Tepper J: Extremity preservation by combined modality therapy in sarcomas of the hand and foot: An analysis of local control disease free survival and functional result. *Int J Rad Onc Biol Phys*, 9:1115-1119, 1983. PubMed PMID: 6307940
12. **Fraass BA**, Harrington FS, Kinsella TJ, Sindelar WF: Television system for verification and documentation of treatment fields during intraoperative radiation therapy. *Int J Rad Onc Biol Phys*, 9:1409-1411, 1983. PubMed PMID: 6885555
13. **Fraass BA**, van de Geijn J: Peripheral dose from megavolt beams. *Med Phys*, 10:809-818, 1983. PubMed PMID: 6419031
14. **Fraass BA**, Granfors PR, Hilleke RO, Simmons RO: Novel x-ray diffractometer/position-sensitive detector system. *Rev Sci Instrum*, 55:5-1460, 1984.
15. van de Geijn J, **Fraass BA**: Net fractional depth dose: A basis for a unified analytical description of FDD, TAR, TMR and TPR. *Med Phys*, 11:784-793, 1984. PubMed PMID: 6439989
16. **Fraass BA**, Roberson PL, Lichter AS: Dose to the contralateral breast due to primary breast irradiation. *Int J Rad Oncol Biol Phys*, 11(3):485-497, 1985. PubMed PMID: 3972661
17. **Fraass BA**, Kinsella TJ, Harrington FS, Glatstein E: Peripheral dose to the testes: The design and clinical use of a simple and effective gonadal shield. *Int J Rad Oncol Biol Phys*, 11(3):609-616, 1985. PubMed PMID: 3972670
18. Glatstein E, Lichter AS, **Fraass BA**, van de Geijn J: The imaging revolution and radiation oncology: Use of CT, ultrasound and NMR for localization, treatment planning, and treatment delivery. *Int J Rad Onc Biol Phys*, 11:299-314, 1985. PubMed PMID: 3882642
19. **Fraass BA**, Miller RW, Kinsella TJ, Sindelar WF, Harrington FS, Yeakel Y, van de Geijn J, Glatstein E: Intraoperative radiation therapy at the National Cancer Institute: Technical innovations and dosimetry. *Int J Rad Onc Biol Phys*, 11:1299-1311, 1985. PubMed PMID: 3924866
20. Shapiro E, Kinsella TJ, Makuch RW, **Fraass BA**, Glatstein E, Rosenberg SA, Sherins RJ: Effects of fractionated irradiation on endocrine aspects of testicular function. *Journal of Clinical Oncology*, 3:1232-1239, 1985. PubMed PMID: 3928830
21. McKenna WG, Yeakel K, Klink A, **Fraass BA**, van de Geijn J, Glatstein E, Lichter AS: Is correction for lung density in radiotherapy treatment planning necessary? *Int J Rad Oncol Biol Phys*, 13:273-278, 1986. PubMed PMID: 3818395
22. Granfors PR, **Fraass BA**, Simmons RO: Direct measurements of thermal vacancies in bcc 4He. *J Low Temp Phys*, 67:353-375, 1987.

23. Ten Haken RK, **Fraass BA**: Relative electron beam measurements: Scaling depths in clear polystyrene to equivalent depths in water. *Med Phys*, 14:410-413, 1987. PubMed PMID: 3600533
24. **Fraass BA**, Simmons RO: X-ray study of phases and structures in 3He-4He solid solutions. *Physical Review B*, 36:97-106, 1987. PubMed PMID: 9942031
25. **Fraass BA**, McShan DL, Diaz RF, Ten Haken RK, Aisen A, Gebarski S, Glazer G, Lichter AS: Integration of magnetic resonance imaging into radiation therapy treatment planning: Technical considerations. *Int J Rad Oncol Biol Phys*, 13:1897-1908, 1987. PubMed PMID: 3679929
26. Ten Haken RK, **Fraass BA**, Jost RJ: Practical methods of electron depth-dose measurement compared to use of the NACP design chamber in water. *Med Phys*, 14(6):1060-1066, 1987. PubMed PMID: 3696072
27. Ten Haken RK, **Fraass BA**: Determination of electron beam mean incident energy from d_{50} (ionization) values. *Med Phys*, 14(6):985-991, 1987. PubMed PMID: 3696085
28. **Fraass BA**, Lichter AS, McShan DL, Yanke BR, Diaz RF, Yeakel KS, van de Geijn J, The influence of lung density corrections on treatment planning for primary breast cancer. *Int J Rad Oncol Biol Phys*, 14(1):179-190, 1988. PubMed PMID: 3335452
29. **Fraass BA**, Simmons RO: X-ray studies of high-temperature defects in concentrated isotopic helium solid solutions. *Phys Rev B*, 37(10):5058-5069, 1988. PubMed PMID: 9943681
30. Weeks KJ, **Fraass BA**, Hutchins KM: Gypsum mixtures for compensator construction. *Med Phys*, 15(3): 410-414, 1988. PubMed PMID: 3405147
31. Ten Haken RK, Diaz RF, McShan DL, **Fraass BA**, Taren JA, Hood TW: From manual to computerized planning for 125-I stereotactic brain implants. *Int J Rad Onc Biol Phys*, 15:467-480, 1988. PubMed PMID: 3042720
32. Weeks KJ, **Fraass BA**, McShan DL, Hardybala SS, Hargreaves EA, Lichter AS, Comparison of automated and manual shielding block fabrication. *Int J Rad Oncol Biol Phys*, 16:501-504, 1989. PubMed PMID: 2921154
33. Ten Haken RK, Perez-Tamayo C, Tesser RJ, McShan DL, **Fraass BA**, Lichter AS, Boost treatment of the prostate using shaped, fixed fields. *Int J Rad Oncol Bio Phys*, 16:193-200, 1989. PubMed PMID: 2492268
34. Kinsella TJ, Trivette G, Eowland J, Sorace R, Miller R, **Fraass BA**, Steinberg SM, Glatstein E, Sjerins RJP: Long-term follow-up of testicular function following radiation therapy for early-stage Hodgkin's disease. *J Clin Oncol*, 7(6):718-24, 1989. PubMed PMID: 2497228
35. **Fraass BA**, Granfors PR, Simmons RO: X-ray measurements of thermal vacancies in hcp 4He. *Phys Rev*, 39:124-131, 1989. PubMed PMID: 9947129
36. LaRouere J, Perez-Tamayo C, **Fraass B**, Tesser R, Lichter AS, Roberts J, Hopkins M, Optimal coverage of peritoneal surface in whole abdominal radiation for ovarian neoplasms. *Int J Rad Oncol Bio Phys*, 17: 607-613, 1989. PubMed PMID: 2777649
37. Schoepfel SL, **Fraass BA**, Hopkins MP, LaVigne ML, Lichter AS, McShan DL, Noffsinger S, Perez-Tamayo C, Roberts JA: A CT-compatible version of the Fletcher system intracavitary applicator: Clinical application and 3-dimensional treatment planning. *Int J Rad Oncol Biol Phys*, 17 (5):1103-1109, 1989. PubMed PMID: 2808045
38. McShan DL, **Fraass BA**, Lichter AS: Full integration of the Beam's Eye View concept into clinical treatment planning. *Int J Rad Oncol Biol Phys*, 18:1485-1494, 1990. PubMed PMID: 2370198
39. Miller RW, van de Geijn J, **Fraass B.A.**: Improving Precision and Safety in the Use of Beam Modifying Devices in Radiation therapy. *Med Phys*, 17:929 930, 1990. PubMed PMID: 2233582
40. Thornton Jr. AS, Hegarty TJ, Ten Haken RK, Yanke BR, LaVigne ML, **Fraass BA**, McShan DL, Greenberg HS: Three-dimensional treatment planning of astrocytomas: Dosimetric study of cerebral irradiation. *Int J Rad Oncol Biol Phys* 20:1309-1315 1991. PubMed PMID: 2045305
41. Yanke BR, Ten Haken RK, Aisen A, **Fraass BA**, Thornton Jr, AF: Design of MRI scan protocols for use in 3-D, CT-based treatment planning. *Med Dosim*, 16:205-211, 1991. PubMed PMID: 1764171
42. Ten Haken, R.K., Lawrence TS, McShan DL, Tesser RJ, **Fraass BA**, Lichter AS: Technical considerations in the use of 3-D beam arrangements in the abdomen. *Radiother Oncol*, 22:19-28, 1991. PubMed PMID: 1947209

43. Stern RL, **Fraass BA**, Gerhardsson A, McShan DL, Lam KL: Generation and use of measurement-based 3-D dose distributions for 3-D dose calculation verification. *Med Phys*, 19:165-173, 1992. PubMed PMID: 1620042
44. Shiu AS, Tung S, Hogstrom KR, Wong JW, Gerber RL, Harms WB, Purdy JA, Ten Haken RK, McShan DL, **Fraass BA**: Verification data for electron beam dose algorithms. *Med Phys*, 19:623-636, 1992. PubMed PMID: 1508101
45. Schoeppel SL, LaVigne ML, Martel MK, McShan DL, **Fraass BA**: Computed tomography-based dosimetry of gynecological intracavitary brachytherapy: A new method for source localization. *Endocurie Hypertherm Oncol*, 8:137-143, July 1992.
46. Ten Haken RK, Thornton AF, Sandler HM, LaVigne ML, Quint DJ, **Fraass BA**, Kessler ML, McShan DL: A quantitative assessment of the addition of MRI to CT-based, 3-D treatment planning of brain tumors. *Radiother Oncol*, 25:121-133, October 1992. PubMed PMID: 1332134
47. Thornton AS Jr, Sandler HM, Ten Haken RK, McShan DL, **Fraass BA**, LaVigne ML, Yanke BR: The clinical utility of MRI in 3-D treatment planning of brain neoplasms. *Int J Radiat Oncol Biol Phys*, 24:767-775, 1992. PubMed PMID: 1429103
48. McShan DL, Matrone G, **Fraass BA**, Lichter AS: A large screen digitizer system for radiation therapy treatment planning. *Int J Radiat Oncol Biol Phys*, 26:681-684, 1993. PubMed PMID: 8331001
49. McShan DL, **Fraass BA**: Use of an octree-like geometry for 3-D dose calculations. *Med Phys*, 20(4):1219-1228, 1993. PubMed PMID: 8413032
50. Purdy JA, Biggs PJ, Bowers C, Dally E, Downs W, **Fraass BA**, Karzmark CJ, Khan F, Morgan P, Morton R, Palta J, Rosen II, Thorson T, Svensson G, Ting J: Medical accelerator safety considerations: Report of AAPM radiation therapy committee task group No. 35. *Med Phys*, 20(4):1261-1275, 1993. PubMed PMID: 8413039
51. **Fraass BA**: Investigating the potential of three dimensional treatment planning, *Med Prog Technol*, 18:227-238, 1993. PubMed PMID: 1339945
52. Schoeppel SL, LaVigne ML, Martel MK, McShan DL, **Fraass BA**, Roberts JA: Three-dimensional treatment planning of intracavitary gynecologic implants: Analysis of ten cases and implications for dose specification. *Int J Rad Oncol Biol Phys* 28:277-283, 1994. PubMed PMID: 8270452
53. McShan DL, **Fraass BA**, Ten Haken RK: Dosimetric verification of a 3-D electron pencil beam dose calculation algorithm. *Med Phys* 21:13-23, 1994. PubMed PMID: 8164578
54. Martel MK, Ten Haken RK, Hazuka MB, Turrisi AT, **Fraass BA**, Lichter AS: Dose-volume histogram and 3-D treatment planning evaluation of patients with pneumonitis. *Int J Radiat Oncol Biol Phys*, 28:575-581, 1994. PubMed PMID: 8113100
55. Kessler ML, Ten Haken RK, **Fraass BA**, McShan DL: Expanding the use and effectiveness of dose-volume histograms for 3-D treatment planning I: Integration of 3-D dose-display. *Int J Rad Oncol Bio Phys*, 29: 1125-1131, 1994. PubMed PMID: 8083082
56. Thompson AV, Lam KL, Balter JM, McShan DL, Martel MK, Weaver TA, **Fraass BA**, Ten Haken RK: Mechanical & dosimetric quality control for computer controlled radiotherapy treatment units. *Med Phys* 22:563-566, 1995. PubMed PMID: 7643792
57. **Fraass BA**: The development of conformal radiation therapy. *Med Phys*, 22,1911-1921, 1995. PubMed PMID: 8587545
58. **Fraass BA**, McShan DL, Kessler ML, Matrone GM, Lewis JD, Weaver T: A computer-controlled conformal radiotherapy system: I. Overview. *Int J Radiat Oncol Biol Phys*, 33: 1139-1157, 1995. PubMed PMID: 7493840
59. McShan DL, **Fraass BA**, Kessler ML, Matrone GM, Lewis JD, Weaver TA: A computer-controlled conformal radiotherapy system. II: Sequence Processor. *Int J Radiat Oncol Biol Phys*, 33:1159-1172, 1995. PubMed PMID: 7493841
60. Kessler ML, McShan DL, **Fraass BA**: A computer-controlled conformal radiotherapy system: III: Graphical simulation and monitoring of treatment delivery. *Int J Radiat Oncol Biol Phys*, 33:1173-1180, 1995. PubMed PMID: 7493842
61. **Fraass BA**, McShan DL, Matrone GM, Weaver TA, Lewis JD, Kessler ML: A computer-controlled conformal radiotherapy system: IV. Electronic chart. *Int J Radiat Oncol Biol Phys*, 33:1181-1194, 1995. PubMed PMID: 7493843

62. McShan DL, Kessler ML, **Fraass BA**: Advanced interactive planning techniques for conformal therapy: High level beam descriptions and volumetric mapping techniques. *Int J Rad Oncol Biol Phys*, 33:1061-1072, 1995. PubMed PMID: 7493832
63. Ten Haken RK, **Fraass BA**, Kessler ML, McShan DL: Aspects of enhanced three-dimensional radiotherapy treatment planning. *Bull Cancer* 82 (Suppl 5): 592s-600s, 1995. PubMed PMID: 8680072
64. Larsen EW, Miften MM, Bruinvis IAD, **Fraass BA**: Electron dose calculations using the method of moments. *Med Phys* 24: 111-125, 1997. PubMed PMID: 9029545
65. Martel MK, Sandler HM, Cornblath WT, Marsh LH, Hazuka MB, Roa WH, **Fraass BA**, Lichter AS: Dose-volume complication analysis for visual pathway structures of patients with advanced Para nasal sinus tumors, *Int J Rad Onc Biol Phys* 38: 273-284, 1997. PubMed PMID: 9226313
66. Moran JM, Martel MK, Bruinvis IAD, **Fraass BA**: Characteristics of scattered electron beams shaped with a multileaf collimator. *Med Phys* 24: 1491-1498, 1997. PubMed PMID: 9304578
67. Martel MK, Strawderman M, Hazuka MB, Turrisi AT, **Fraass BA**, Lichter AS: Volume and dose parameters for survival of non-small cell lung cancer patients. *Radiotherapy and Oncology*, 44: 23 - 30, 1997. PubMed PMID: 9288853
68. Eisbruch A, Marsh LH, Martel MK, Ship JA, Ten Haken RK, Pu AT, **Fraass BA**, Lichter AS: Comprehensive irradiation of head and neck cancer using conformal multisegmental fields: Assessment of target coverage and noninvolved tissue sparing. *Int J Rad Onc Biol Phys*, 41: 559-568, 1998. PubMed PMID: 9635702
69. Martel MK, Eisbruch A, Lawrence TS, **Fraass BA**, Ten Haken RK, Lichter AS: Cord dose from standard head and neck treatments: implications for conformal treatment plans. *Radiotherapy and Oncology* 47: 185-190, 1998. PubMed PMID: 9683367
70. Ten Haken R K, **Fraass BA**, Lichter A S, Marsh L H, Radany E H, Sandler H M: A brain tumor dose escalation protocol based on effective dose equivalence to prior experience. *Int J Rad Oncol Biol Phys* 42: 137-141, 1998. PubMed PMID: 9747830
71. **Fraass BA**, Lash KL, Matrone GM, Volkman SK, McShan DL, Kessler ML, Lichter AS: The impact of treatment complexity and computer-control delivery technology on treatment delivery errors. *Int J Rad Onc Biol Phys* 42: 651-659, 1998. PubMed PMID: 9806527
72. **Fraass BA**, Doppke KP, Hunt MA, Kutcher GJ, Starkschall G, Stern RL, Van Dyk J: American Association of Physicists in Medicine Task Group 53: Quality assurance for clinical radiotherapy treatment planning. *Med Phys* 25: 1773-1829, 1998. PubMed PMID: 9800687
73. Lee SW, **Fraass BA**, Herbort K, Marsh LH, Gebarski SS, Martel MK, Radany EH, Lichter AS, Sandler HM: Patterns of failure following high dose 3-D conformal radiotherapy for high grade astrocytomas--a quantitative dosimetric study. *Int J Rad Oncol Biol Phys*, 43:79-88, 1999. PubMed PMID: 9989517
74. Martel MK, Ten Haken RK, Hazuka MB, Kessler ML, Strawderman M, Turrisi AT, Lawrence TS, **Fraass BA**, Lichter AS: Estimation of tumor control probability model parameters from 3-D dose distributions of non-small cell lung cancer patients. *Lung Cancer* 24(1):31-37, 1999. PubMed PMID: 10403692
75. Damen EMF, Brugmans MJP, van der Horst A, Bos L, Lebesque JV, Mijnheer BJ, McShan DL, **Fraass BA**, Kessler ML: Planning, computer-optimization, and dosimetric verification of a segmented irradiation technique for prostate cancer. *Int J Rad Oncol Biol Phys* 49: 1183-1195, 2001. PubMed PMID: 11240262
76. Vineberg KA, Eisbruch A, Coselmon MM, McShan DL, Kessler ML, **Fraass BA**: Is uniform target dose possible in IMRT plans in the head and neck. *Int. J. Rad. Onc. Biol. Phys.* 52: 1159-1172. 2002. PubMed PMID: 11955726
77. Litzenberg DW, **Fraass BA**, McShan DL, O'Donnell TW, Roberts DA, Becchetti FD, Bielajew AF and Moran JM: An apparatus for applying strong longitudinal magnetic fields to clinical photon and electron beams. *Phys. Med. Bio.*, 46: N105-N115, 2001. PubMed PMID: 11384072
78. Graves MN, Thompson AV, Martel MK, McShan DL, **Fraass BA**: Radiation field size calibration and quality assurance for rounded leaf-end MLC systems. *Med Phys* 28: 2227-2233, 2001. PubMed PMID: 11764026
79. Intensity Modulated Radiation Therapy Collaborative Working Group (Boyer AL, Butler EB, DiPetrillo TA, Engler MJ, **Fraass BA**, et al): "Intensity modulated radiotherapy: current status and issues of interest". *Int J Rad Oncol Biol Phys* 51: 880-914, 2001. PubMed PMID: 11704310
80. Pierce LJ, Butler JB, Martel MK, Normolle DP, Koelling T, Marsh RB, Lichter AS, **Fraass BA**: Post-mastectomy radiotherapy of the chest wall: dosimetric comparison of common techniques. *Int J Rad Oncol Biol Phys* 52: 1220-1230, 2002. PubMed PMID: 11955732

81. Chan JL, Lee SW, **Fraass BA**, Normolle DP, Greenberg HS, Junck LR, Gebarski SS, Sandler HM: Survival and failure patterns of high-grade gliomas following 3-D conformal radiotherapy. *J Clin Oncol* 20:1635-1642, 2002. PubMed PMID: 11896114
82. Litzenberg DW, Moran JM, **Fraass BA**: Incorporation of Realistic Delivery Limitations into Dynamic MLC Treatment Delivery. *Med Phys* 29: 810-820, 2002. PubMed PMID: 12033577
83. Chetty IJ, Moran JM, Nurushev T, McShan DL, **Fraass BA**, Wilderman SJ, Bielajew AF: Experimental Validation of the Dose Planning Method (DPM) Monte Carlo code using minimally scattered electron beams in heterogeneous media. *Phys. Med. Biol.* 47: 1837-1851, 2002. PubMed PMID: 12108770
84. Chetty IJ, Moran JM, McShan DL, **Fraass BA**, Wilderman SJ, Bielajew AF: Benchmarking of the Dose Planning Method (DPM) Monte Carlo code using electron beams from a racetrack microtron. *Med. Phys.* 29:1035-1041, 2002. PubMed PMID: 12094973
85. DW Litzenberg, JM Moran, **BA Fraass**: Verification of dynamic and segmental IMRT delivery by dynamic log file analysis. *J. Appl. Clin. Med. Phys.*, 3, 63-72, 2002. PubMed PMID: 11958647
86. Seppenwoolde Y, Engelsman M, De Jaeger K, Muller SH, Baas P, Belderbos JSA, McShan DL, **Fraass BA**, Kessler ML, Belderbos JSA, Boersma LJ, Lebesque JV: Optimizing radiation treatment plans for lung cancer using lung perfusion information. *Radiotherapy Oncology* 63: 165-177, 2002. PubMed PMID: 12063006
87. F Claus, B Mijnheer, C Rasch, T Bortfeld, **B Fraass**, W De Gerssem, H Wirtz, C Hoinkis, BC Cho, LW Kwong, H Bae, K Muller, et al: Report of a study on IMRT planning strategies for ethmoid sinus cancer. *Strahlenther Onkol* 178: 572-6, 2002. PubMed PMID: 12386789
88. Luc J. Bos, Eugène M.F. Damen, Roel W. de Boer, Ben J. Mijnheer, Daniel L. McShan, **Benedick A. Fraass**, Marc L. Kessler, Joos V. Lebesque, Reduction of rectal dose by integration of the boost in the large-field treatment plan for prostate irradiation, *Int J Rad Oncol Biol Phys* 52:1 : 254-265, 2002. PubMed PMID: 11777644
89. PM Charland, IJ Chetty, S Yokoyama, **BA. Fraass**: Dosimetric comparison of Extended Dose Range Film with ionization measurements in water and lung equivalent heterogeneous media exposed to megavoltage photons. *J Appl Clin Med Phys* 4: 25-39, 2003. PubMed PMID: 12540816
90. Tsien C, Eisbruch A, McShan DL, Kessler ML, Marsh R, **Fraass BA**: Intensity modulated radiotherapy (IMRT) for locally advanced paranasal sinus tumors: incorporating clinical decisions into the inverse planning process. In press, *Int J Radiat Oncol Biol Phys* 55: 776-84, 2003. PubMed PMID: 12573765
91. EA Krueger, **BA Fraass**, DL McShan, R Marsh, LJ Pierce: Potential gains for irradiation of chest wall and regional nodes with intensity modulated radiation therapy (IMRT). *Int J Rad Onc Biol Phys* 56: 1023-1037, 2003. PubMed PMID: 12829138
92. Chetty IJ, Charland PM, Tyagi N, McShan DL, **Fraass BA**, Bielajew AF: Photon beam relative dose validation of the DPM Monte Carlo code in lung-equivalent media, *Med. Phys* 30(4):563-573, 2003. PubMed PMID: 12722808
93. Chetty IJ, Tyagi N, Rosu M, Charland PM, McShan DL, Ten Haken RK, **Fraass BA**, Bielajew AF: Clinical implementation, validation and use of the DPM Monte Carlo code for radiotherapy treatment planning, *Proceedings of the Nuclear Mathematical and Computational Sciences Meeting: A Century in Review - A Century Anew*, Gatlinburg, TN, April 2003, American Nuclear Society: 119:1-17, 2003.
94. Chetty IJ, **Fraass BA**, Balter JM, McShan DL, Tyagi N, Ten Haken RK. A fluence convolution method to account for respiratory motion in 3D dose calculations of the liver: A Monte Carlo study. *Med Phys* 30(7):1776-80, 2003. PubMed PMID: 12906195
95. **BA Fraass**, J Smathers, J Deye: Summary and recommendations of a National Cancer Institute workshop on issues limiting the clinical use of Monte Carlo dose calculation algorithms for megavoltage external beam radiation therapy. *Med Phys*, 30: 3206-3216, 2003. PubMed PMID: 14713087
96. PM Charland, IJ Chetty, LD Paniak, BP Bednarz, **BA Fraass**: Enhanced spectral discrimination through the exploitation of interface effects in photon dose data. *Med Phys*, 31: 264-276, 2004. PubMed PMID: 15000612
97. J Moni, M Graves-Ditman, P Cederna, K Griffith, EA Krueger, **BA Fraass**, LJ Pierce: Dosimetry around metallic ports in tissue expanders in patients receiving postmastectomy radiation therapy: an ex vivo evaluation. *Med Dosim* 29: 49-54, 2004. PubMed PMID: 15023393

98. IJ Chetty, M Rosu, DL McShan, **BA Fraass**, JM Balter, RK Ten Haken: Accounting for center-of-mass target motion using convolution methods in Monte Carlo-based dose calculations of the lung. *Med. Phys* 31: 925-932, 2004. PubMed PMID: 15125011
99. Roberts, D.A., Moran, J. M. Antonuk, L. E., El-Mohri, Y., and **Fraass, B. A.** Charge trapping at high doses in an active matrix flat panel dosimeter. *IEEE Transactions in Nuclear Science* 51: 1427-1433, 2004.
100. SK Yokoyama, PL Roberson, DW Litzenberg, JM Moran, **BA Fraass**: Surface buildup dose dependence on photon field delivery technique for IMRT. *J Appl Clin Med Phys* 5: 71-81, 2004. PubMed PMID: 15738914
101. Kessler ML, McShan DL, Vineberg KA, Eisbruch A, Lawrence TS, Epelman, M, **Fraass BA**: Costlets: a generalized approach to cost functions for automated optimization. *Optimization and Engineering* 6: 421-448, 2005.
102. Chetty IJ, Rosu M, McShan DL, **Fraass BA**, Ten Haken RK: The influence of beam model differences in the comparison of dose calculation algorithms for lung cancer treatment planning. *Phys Med Biol* 50: 801-815, 2005. PubMed PMID: 15798256
103. MM Coselmon, JM Moran, J Radawski, **BA Fraass**: Improving IMRT delivery efficiency using intensity limits during inverse planning. *Med Phys* 32: 1234-1245, 2005. PubMed PMID: 15984674
104. Moran JM, Radawski J, **Fraass BA**: A dose gradient analysis tool for IMRT QA. *J Appl Clin Med Phys* 6: 62-73, 2005. PubMed PMID: 15940213
105. Moran JM, Roberts DA, Nurushev TS, Antonuk LE, El-Mohri Y, **Fraass BA**: An active matrix flat panel dosimeter (AMFPD) for in-phantom dosimetric measurements. *Med Phys* 32: 466-472, 2005. PubMed PMID: 15789593
106. Morris DE, Emami B, Mauch PM, Kanski AA, Tao ML, Ng AK, Klein EA, Mohideen N, Hurwitz MD, **Fraass BA**, Roach M 3rd, Gore EM, Tepper JE: Evidence-based review of three-dimensional conformal radiotherapy for localized prostate cancer: an ASTRO outcomes initiative. *Int J Radiat Oncol Biol Phys* 62: 3-19, 2005. PubMed PMID: 15850897
107. Chapet O, Thomas E, Kessler ML, **Fraass BA**, Ten Haken RK: Esophagus sparing with IMRT in lung tumor irradiation, an EUD-based optimization technique. *Int J Radiat Oncol Biol Phys* 63: 179-187, 2005. PubMed PMID: 16111587
108. Chapet O, **Fraass BA**, Ten Haken RK: Multiple fields may offer better esophagus sparing without increased probability of lung toxicity in optimized IMRT of lung tumors. *Int J Radiat Oncol Biol Phys* 65: 255-265, 2006. PubMed PMID: 16618580
109. Kong F-M, Hayman JA, Griffith KA, Kalemkerian GP, Arenberg D, Lyons S, Turrisi A, Lichter A, **Fraass BA**, Eisbruch A, Lawrence TS, Ten Haken RK: Final toxicity results of a radiation dose escalation study in patients with non-small cell lung cancer: Predictors for radiation pneumonitis and fibrosis. *Int J Radiat Oncol Biol Phys* 65:1075-86, 2006. PubMed PMID: 16647222.
110. Kulasekere R, Moran JM, **Fraass BA**, Roberson PL: Accuracy of rapid radiographic film calibration for intensity modulated radiation therapy verification. *JACMP* 7: 86-95, 2006. PubMed PMID: 17533325
111. DL McShan, ML Kessler, K Vineberg, **BA Fraass**. Inverse Plan Optimization Accounting For Geometric Uncertainties With A Multiple Instance Geometry Approximation (MIGA). *Med Phys* 33:1510-21, 2006. PubMed PMID: 16752585
112. Chetty IJ, Rosu M, Kessler ML, **Fraass BA**, Ten Haken RK, Kong FM, McShan DL: Reporting and analyzing statistical uncertainties in Monte Carlo-based treatment planning. *Int J Radiat Oncol Biol Phys* 65:1249-59, 2006. PubMed PMID: 16798417.
113. Spalding AC, Jee K-W, Vineberg K, Jablonowski M, **Fraass BA**, Pan CC, Lawrence TS, Ten Haken RK, Ben-Josef E.: The potential for dose-escalation and reduction of risk in pancreatic cancer using IMRT optimization with lexicographic ordering and gEUD-based cost functions. *Med Phys* 34: 521-529, 2007. PubMed PMID: 17388169.
114. Matuszak MM, Larsen EW, **Fraass BA**: Reduction of IMRT beam complexity through the use of beam modulation penalties in the objective function. *Med Phys* 34: 507-520, 2007. PubMed PMID: 17388168.
115. Tyagi N, Moran JM, Litzenberg DW, Bielajew AF, **Fraass BA**, Chetty IJ: Experimental verification of a Monte Carlo-based MLC simulation model for IMRT dose calculation. *Med Phys* 34: 651-663, 2007. PubMed PMID: 17388183.
116. Jee K, McShan DL, **Fraass BA**: Preemptive Lexicographic Ordering: More Intuitive IMRT Optimization. *Phys Med Bio* 52: 1845-1861, 2007. PubMed PMID: 17374915.

117. Chen Y, Moran JM, Roberts DA, El-Mohri Y, Antonuk LE, **Fraass BA**: Performance of a direct-detection active matrix flat panel dosimeter (AMFPD) for IMRT measurements. *Med Phys* 34: 4911-4922, 2007. PubMed PMID: 18196816.
118. **Fraass BA**: QA Issues for Computer-Controlled Treatment Delivery: This Isn't Your Old R/V System Any More !. *Int J Rad Onc Biol Phys* 71 (Suppl): S98-S102, 2008. PubMed PMID: 18406948
119. **Fraass BA**: Errors in Radiotherapy: Motivation for Development of New Radiotherapy Quality Assurance Paradigms. *Int J Rad Onc Biol Phys* 71 (Suppl): S162-S165, 2008. PubMed PMID: 18406918..
120. MS Huq, **BA Fraass**, PB Dunscombe, JP Gibbons, GS Ibbott, PM Medin, A Mundt, S Mutic, JR Palta, BR Thomadsen, JF Williamson, ED Yorke: A method for evaluating quality assurance needs in radiation therapy. *Int J Rad Onc Biol Phys* 71 (Suppl): S170-S173, 2008. PubMed PMID: 18406920.
121. Matuszak MM, Larsen EW, Jee K-W, McShan DL, **Fraass BA**: Adaptive diffusion smoothing: A diffusion-based method to reduce IMRT field complexity. *Med Phys* 35: 1532-1546, 2008. PubMed PMID: 18491548
122. Lin A, Moran JM, Marsh RB, Balter JM, **Fraass BA**, McShan DL, Kessler ML, Pierce LJ: Evaluation of multiple breathing states using a multiple instance geometry approximation (MIGA) in inverse-planned optimization for loco-regional breast treatment. *Int J Rad Oncol Biol Phys* 72: 610-616, 2008. PubMed PMID: 18793965
123. **BA Fraass**, LB Marks, T Pawlicki: Safety Considerations in Contemporary Radiation Oncology: Introduction to a Series of ASTRO Safety White Papers. *Prac Rad Onc* 1: 188-189, 2011. PubMed PMID: 24673949
124. JM Moran, M Dempsey, A Eisbruch, **BA Fraass**, JM Galvin, GS Ibbott, LB Marks: Safety Considerations for IMRT: Executive Summary. *Prac Rad Onc* 1: 190-195, 2011. PubMed PMID: 25740119, Co-published in *Medical Physics* 38: 5067-5072, 2011. PubMed PMID: 21978051.
125. TM Williams, JM Moran, SH Hsu, R Marsh, B Yanke, **BA Fraass**, LJ Pierce: Contralateral Breast Dose After Whole-Breast Irradiation: An Analysis by Treatment Technique. *Int J Radiat Oncol Biol Phys* 82: 2079085, 2012. PubMed PMID: 21489713.
126. TD Solberg, JM Balter, SH Benedict, **BA Fraass**, B Kavanagh, C Miyamoto, T Pawlicki, L Potters, Y Yamada: Quality and safety considerations in stereotactic radiosurgery and stereotactic body radiation therapy: executive summary. *Prac Rad Onc* 2: 2-9, 2012. Full report available at <http://www.practicalradonc.org>. To be co-published in *Medical Physics*, 2012. PubMed PMID: 25740120
127. **BA Fraass**, JM Steers, MM Matuszak, DL McShan: Inverse-optimized 3-D conformal planning: minimizing complexity while achieving equivalence with beamlet IMRT in multiple sites. *Med Phys* 39: 3361-3374, 2012. PubMed PMID: 22755717.
128. T Long, M Matuszak, M Feng, **BA Fraass**, RK Ten Haken, HE Romeijn: Sensitivity analysis for lexicographic ordering in radiation therapy treatment planning. *Med Phys* 39: 3445-3455, 2012. PubMed PMID: 22755724.
129. KC Younge, MM M Matuszak, JM Moran, DL McShan, **BA Fraass**, Donald A Roberts: Penalization of aperture complexity in inversely planned volumetric modulated arc therapy. *Med Phys* 39: 7160-7170, 2012. PubMed PMID: 23127107.
130. D Jaffray, K Langen, G Mageras, L Dawson, D Yan, R Adams, A Mundt, **BA Fraass**: Assuring Safety and Quality in Image-guided Delivery of Radiation Therapy. *Prac Rad Onc* 3: 167-170, 2013. Full report published on-line at: <http://www.practicalradonc.org/article/S1879-8500%2813%2900007-6/addOns> PubMed PMID: 24175003
131. LB Marks, RD Adams, T Pawlicki, AL Blumberg, D Hoopes, MD Brundage, **BA Fraass**: Enhancing the Role of Case-Oriented Peer Review to Improve Quality and Safety in Radiation Oncology: Executive Summary. *Prac Rad Onc* 3: 149-156, 2013. Full report published on line at: <http://www.practicalradonc.org/article/S1879-8500%2812%2900207-X/addOns> PubMed PMID: 24175002
132. JA Efstathiou, DS Nassif, TR McNutt, CB Bogardus, W Bosch, J Carlin, RC Chen, H Chou, D Eggert, **BA Fraass**, J Goldwein, KE Hoffman, K Hotz, M Hunt, M Kessler, CAF Lawton, C Mayo, JM Michalski, S Mutic, L Potters, CM Rose, HM Sandler, G Sharp, W Tome, PT Tran, T Wall, AL Zietman, PE Gabriel, JE Bekelman: Practice-based evidence to evidence-based practice: building the National Radiation Oncology Registry. *J Onc Practice* 9: e90-e95, 2013. PubMed PMID: 23942508.
133. JR Wilkie, MM Matuszak, M Feng, JM Moran, **BA Fraass**: Use of plan quality degradation to evaluate tradeoffs in delivery efficiency and clinical plan metrics arising from IMRT optimizer

- and sequencer compromises. *Med Phys* 40: 071708-1 – 071708-10, 2013. PubMed PMID: 23822412.
134. MM Matuszak, JM Steers, T Long, DL McShan, **BA Fraass**, HE Romeijn, RK Ten Haken: FusionArc optimization: a hybrid volumetric modulated arc therapy (VMAT) and intensity modulated radiation therapy (IMRT) planning strategy. *Med Phys* 40: 071713-1 – 071713-10, 2013. PubMed PMID: 23822417.
 135. BR Thomadsen, BA Erickson, PJ Eifel, I-C Hsu, RR Patel, DG Petereit, **BA Fraass**, MJ Rivard: A Review of Safety, Quality Management and Practice Guidelines for High-Dose-Rate Brachytherapy. *Pract Rad Oncol* 4: 65-70, 2014. PubMed PMID: 24890345
 136. W Yang, **BA Fraass**, R Reznik, N Nissen, S Lo, LH Jamil, K Gupta, H Sandler, R Tuli: Adequacy of inhale/exhale breathhold CT based ITV margins and image-guided registration for free-breathing pancreas and liver SBRT. *Radiation Oncology* 9: 1-11, 2014. PubMed PMID: 24401365
 137. W Yang, R Reznik, **BA Fraass**, N Nissen, A Hendifar, A Wachsmann, H Sandler, R Tuli: Dosimetric evaluation of simultaneous integrated boost during stereotactic body radiation therapy for pancreatic cancer. *Med Dosim.* 2015 Spring;40(1):47-52. doi: 10.1016/j.meddos.2014.09.001. Epub 2014 Oct 22. PubMed PMID: 25445989.
 138. W Yang, EM McKenzie, M Burnison, S Shiao, A Mirhadi, B Hakimian, R Tuli, R Reznik, H Sandler, **BA Fraass**: Clinical experience using a video-guided spirometry system for deep inhalation breath-hold radiotherapy of left-sided breast cancer. *J Appl Clin Med Phys.* 2015 Mar 8;16(2):5218. doi: 10.1120/jacmp.v16i2.5218. PubMed PMID: 26103193.
 139. DJ Hoopes, PA Johnstone, PS Chapin, CM Kabbant, WR Lee, AB Chen, **BA Fraass**, WJ Skinner, LB Marks: Practice Patterns for Peer Review in Radiation Oncology. *Pract Radiat Oncol.* 2015 Jan-Feb;5(1):32-8. doi: 10.1016/j.prr.2014.04.004. Epub 2014 Jun 2. PubMed PMID: 25413419.
 140. Z Deng, J Pang, W Yang, Y Yue, B Sharif, R Tuli, D Li, B Fraass, Z Fan: 4D MRI using 3D radial sampling with respiratory self-gating to characterize temporal phase-resolved respiratory motion in the abdomen. *Magn Reson Med.* 2016 Apr;75(4):1574-85. doi: 10.1002/mrm.25753. PubMed PMID: 25981762.
 141. Hoopes DJ, Dicker AP, Eads NL, Ezzell GA, Fraass BA, Kwiatkowski TM, Lash K, Patton GA, Piotrowski T, Tomlinson C, Ford EC: RO-ILS: Radiation Oncology Incident Learning System: A report from the first year of experience. *Pract Radiat Oncol.* 2015 Sep-Oct;5(5):312-8. doi: 10.1016/j.prr.2015.06.009. Epub 2015 Jun 25. PubMed PMID: 26362705
 142. Yue Y, Fan Z, Yang W, Pang J, Deng Z, McKenzie E, Tuli R, Wallace R, Li D, **Fraass B**: Geometric validation of self-gating k-space-sorted 4D-MRI vs 4D-CT using a respiratory motion phantom. *Med Phys.* 2015 Oct;42(10):5787. doi: 10.1118/1.4929552. PubMed PMID: 26429253
 143. Smilowitz JB, Das IJ, Feygelman V, **Fraass BA**, Kry SF, Marshall IR, Mihailidis DN, Ouhib Z, Ritter T, Snyder MG, Fairbent L, AAPM Staff: AAPM Medical Physics Practice Guideline 5.a.: Commissioning and QA of Treatment Planning Dose Calculations — Megavoltage Photon and Electron Beams. *JACMP* 16: 14-24 (2015). PubMed PMID: 26699330
 144. W Yang, Z Fan, R Tuli, Z Deng, J Pang, A Wachsmann, R Reznik, H Sandler, D Li, **BA Fraass**: Four-dimensional Magnetic Resonance Imaging with 3D Radial Sampling and Self-gating based K-space Sorting: Early Clinical Experience on Pancreatic Cancer Patients. *Int J Radiat Oncol Biol Phys* 93: 1136-1143, 2015. PubMed PMID: 26452571
 145. Y Yue, X Cui, S Bose, MW Audeh, X Zhang, **BA Fraass**: Stratifying Triple-negative Breast Cancer Prognosis using 18F-FDG-PET/CT Imaging. *Breast Cancer Research and Treatment* 153: 607-616, 2015. PubMed PMID: 26346756
 146. JM Steers and **BA Fraass**: IMRT QA: Selecting gamma criteria based on error detection sensitivity. *Med Phys* 43: 1982-1994, 2016. PMID: 27036593.
 147. SH Benedict, K Hoffman, MK Martel, A Abernethy, AL Asher, J Capala, R Chen, B Chera, J Couch, J Deye, J Efstathiou, E Ford, **BA Fraass**, P Gabriel, V Huser, BD Kavanagh, D Khuntia, L Marks, C Mayo, T McNutt, RS Miller, K Moore, F Prior, E Roelofs, B Rosenstein, J Sloan, A Theriault, B Vikram: Overview of the ASTRO-NIH-AAPM Workshop 2015: Exploring Opportunities for Radiation Oncology in the Era of Big Data. *Int J Radiat Oncol Biol Phys* 95: 873-879, 2016. PMID: 27302503
 148. MS Huq, **BA Fraass**, DB Dunscombe, JP Gibbons, GS Ibbott, AJ Mundt, S Mutic, JR Palta, RF Rath, BR Thomadsen, JF Williamson, ED Yorke: Application of Risk Analysis Methods to Radiation Therapy Management. *Med Phys* 43: 4209-4262, 2016. PMID: 27370140.

149. SB Evans, **BA Fraass**, P Berner, KS Collins, T Nurushev, MJ O'Neill, J Zeng, LB Marks: Standardizing dose prescriptions: An ASTRO white paper. *Pract Radiat Oncol*. 2016 Nov - Dec;6(6): e369-e381. doi: 10.1016/j.pro.2016.08.007. PubMed PMID: 27693224.
150. K Jin, E McKenzie, Z Fan, R Tuli, Z Deng, J Pang, **B Fraass**, D Li, H Sandler, G Yang, K Sheng, S Gou, W Yang. Nonlocal Means Denoising of Self-Gated and k-Space Sorted 4-Dimensional Magnetic Resonance Imaging Using Block-Matching and 3-Dimensional Filtering: Implications for Pancreatic Tumor Registration and Segmentation. *Int J Radiat Oncol Biol Phys*. 2016 Jul 1;95(3):1058-66. doi: 10.1016/j.ijrobp.2016.02.006. PubMed PMID: 27302516; PubMed Central PMCID: PMC4911822.
151. Y Yue, K Astvatsaturyan, X Cui, X Zhang, **B Fraass**, S Bose. Stratification of Prognosis of Triple-Negative Breast Cancer Patients Using Combinatorial Biomarkers. *PLoS One*. 2016 Mar 1;11(3):e0149661. doi: 10.1371/journal.pone.0149661. PubMed PMID: 26930401; PubMed Central PMCID: PMC4773063.

B. RESEARCH PAPERS - PEER REVIEWED (IN PRESS)

- 1.

C. RESEARCH PAPERS - PEER REVIEWED (SUBMITTED)

1. Y Yue, S Shiao, M Burnison, X Cui, W Audeh, X Zhang, H Sandler, **B Fraass**: Identifying Integrative Prognostic Values of EGFR, CK5/6 and Ki-67 for Triple-Negative Breast Cancer Patients. *Annals Surg Oncology*, submitted 2015.

RESEARCH PAPERS (NON-PEER REVIEWED)

D. RESEARCH PAPERS - NON-PEER REVIEWED

1. **Fraass BA**, Heald SM, Simmons RO: "Thermal vacancies in solid helium". Proceedings of the International Quantum Crystals Conference, (ed) J Sites, (Colorado State University, Ft. Collins, Colorado, 1977), p. C-78.
2. **Fraass BA**: "Thermal Vacancies and Phase Separation in BCC Mixtures of Helium-3 and Helium-4." Ph.D. Thesis, University of Illinois, 1980. Available from University Microfilms, Ann Arbor, Michigan.
3. van de Geijn J, **Fraass BA**: "Application of the projective dose field model to clinical electron beams." Proceedings of the Seventh International Congress of Radiation Research, (ed) JJ Broerse, (Marinns Nijhoff Publishers, 1983).
4. **Fraass BA**: "Practical implications of three-dimensional radiation therapy treatment planning." Syllabus: "A Categorical Course in Radiation Therapy Treatment Planning." (ed) BR Paliwal and ML Griem, Radiological Society of North America, Chicago, 1986, pp 13-21.
5. McShan DL, **Fraass BA**: "3-D treatment planning: II. Integration of gray scale images and solid surface graphics." *The Use of Computers in Radiation Therapy*, (ed) IAD Bruinvis, et al. Elsevier Science Publishers BV, (North-Holland), 1987, pp. 41-44.
6. **Fraass BA**, McShan DL, Weeks KJ: "3-D treatment planning: III. Complete Beam's-Eye-View planning capabilities." *The Use of Computers in Radiation Therapy*, (ed) IAD Bruinvis, et al. Elsevier Science Publishers BV, (North-Holland), 1987, pp. 193-196.
7. McShan DL, Ten Haken RK, **Fraass BA**: "3-D treatment planning: IV. Integrated brachytherapy treatment planning." *The Use of Computers in Radiation Therapy*, (ed) IAD Bruinvis, et al. Elsevier Science Publishers BV, (North-Holland), 1987 pp 249-252.
8. **Fraass BA**, McShan DL: "3-D treatment planning: I. Overview of a clinical planning system." *The Use of Computers in Radiation Therapy*, (ed) IAD Bruinvis, et al. Elsevier Science Publishers BV, (North-Holland), 1987, pp. 273-276.
9. McShan DL, **Fraass BA**, "Integration of multi-modality imaging for use in radiation therapy treatment planning." in *Computer Assisted Radiology*, Berlin, 1987, Springer-Verlag, pp. 300-304.
10. **Fraass BA**, McShan DL, Ten Haken RK, Hutchins KM: "3-D treatment planning: V. A Fast 3-D photon calculation model." *The Use of Computers in Radiation Therapy*, (ed) IAD Bruinvis, et al. Elsevier Science Publishers BV, (North-Holland), 1987, pp. 521-525.

11. **Fraass BA**: "Image communication and image analysis needs in radiation therapy." Proceedings of the 1987 AAPM Summer School, Ann Arbor, Michigan 1987 pp 35-44.
12. Lichter AS, **Fraass BA**, McShan DL: Recent advances in radiotherapy treatment planning. *Oncology*, May 1988. PubMed PMID: 3079328
13. Lichter AS, **Fraass BA**, Yanke BR: Treatment techniques in the conservative management of breast cancer. *Semin Radiat Oncol*, 2(2):94-106, 1992. PubMed PMID: 10717023
14. Kessler ML, McShan DL, **Fraass BA**: Displays for 3-D treatment planning. *Semin Radiat Oncol*, 2:226-234, 1992. PubMed PMID: 10717039
15. Lichter AS, Sandler HM, Robertson JM, Lawrence TS, Ten Haken RK, McShan DL, **Fraass BA**: Clinical experience with three-dimensional treatment planning, *Semin Radiat Oncol*, 2:257-266, 1992. PubMed PMID: 10717042
16. **Fraass BA**, Matrone GM, McShan DL: "An electronic chart for computer-controlled conformal therapy". In Proceedings of the XIth International Conference on the use of Computers in Radiation Therapy, AR Hounsell, JM Wilkinson & PC Williams, eds., (Medical Physics Publishing, Madison WI, 1994) p. 218-219.
17. **Fraass BA**, Martel MK, McShan DL: "Tools for dose calculation verification and QA for conformal therapy treatment techniques". In Proceedings of the XIth International Conference on the use of Computers in Radiation Therapy, AR Hounsell, JM Wilkinson & PC Williams, eds., (Medical Physics Publishing, Madison WI, 1994) p. 256-257.
18. McShan DL, **Fraass BA**: UM-CCRS/SP: "Sequence processor for computer-controlled radiotherapy treatment delivery". In Proceedings of the XIth International Conference on the use of Computers in Radiation Therapy, AR Hounsell, JM Wilkinson & PC Williams, eds., (Medical Physics Publishing, Madison WI, 1994) p. 210-211
19. Kessler ML, McShan DL, **Fraass BA**: "A graphical simulator for design and verification of computer-controlled treatment delivery". In Proceedings of the XIth International Conference on the use of Computers in Radiation Therapy, AR Hounsell, JM Wilkinson & PC Williams, eds., (Medical Physics Publishing, Madison WI, 1994) p. 80-81.
20. Ten Haken RK, Martel MK, Lawrence TS, Kessler MK, **Fraass BA**: "Use of dose-volume-response factors in conformal high-dose therapy studies". In Proceedings of the XIth International Conference on the use of Computers in Radiation Therapy, AR Hounsell, JM Wilkinson & PC Williams, eds., (Medical Physics Publishing, Madison WI, 1994) p. 22-23.
21. Ten Haken RK, Thompson AV, McShan DL, Lam KL, Balter JM, Martel MK, Moran J, **Fraass BA**: "Quality control programs for computer controlled treatment units". In Proceedings of the XIth International Conference on the use of Computers in Radiation Therapy, AR Hounsell, JM Wilkinson & PC Williams, eds., (Medical Physics Publishing, Madison WI, 1994) p. 262-263.
22. **Fraass BA**, McShan DL, Kessler ML: Computer-controlled treatment delivery. *Semin Radiat Oncol*, 5: 77-85, 1995. PubMed PMID: 10717131
23. **Fraass BA**: "The clinical use of computer-controlled conformal radiation therapy", in Proceedings of the ESTRO Teaching Course in Conformal Radiotherapy in Practice, Amsterdam, the Netherlands, 1998. pp.191-203.
24. **Fraass BA**: "Quality assurance for 3-D treatment planning", in Proceedings of the ESTRO Teaching Course in Conformal Radiotherapy in Practice, Amsterdam, the Netherlands, 1998. pp.275-283.
25. **Fraass BA**: "Conformal radiotherapy dose escalation studies: clinical results", in Proceedings of the ESTRO Teaching Course in Conformal Radiotherapy in Practice, Amsterdam, the Netherlands, 1998. pp.307-317.
26. **BA Fraass**, ML Kessler, DL McShan, LH Marsh, B Watson, W Dusseau, A Eisbruch, HM Sandler, AS Lichter: Optimization and clinical use of multisegment IMRT for high dose conformal therapy. *Semin Radiat Oncol* 9: 60-77, 1999. PubMed PMID: 10196399
27. **Fraass BA**, McShan DL, Kessler ML: Dose-Based Conformal Field Shaping Using Automated Optimization, in Proceedings of the XIIIth International Conference On the Use of Computers In Radiotherapy, ed. T Bortfeld, W Schlegel, University of Heidelberg, Heidelberg, Germany, 2000: pp. 32-35.
28. McShan DL, Kessler ML, **Fraass BA**: Incorporating clinical factors in plan optimization, in Proceedings of the XIIIth International Conference On the Use of Computers In Radiotherapy, ed. T Bortfeld, W Schlegel, University of Heidelberg, Heidelberg, Germany, 2000: pp. 535-536.
29. Becchetti FD, Litzenberg DW, Moran JM, O'Donnell TW, Roberts DA, **Fraass BA**, McShan DL, Bielajew AF: Magnetic confinement of radiotherapy beam-dose profiles. In "Cyclotrons and

- Their Applications 2001, Sixteenth International Conference”, Ed. F. Marti, AIP, pp 44-46, 2001.
30. Krueger EA, **Fraass BA**, Pierce LJ: Clinical aspects of intensity modulated radiotherapy in the treatment of breast cancer. *Sem Radiat Oncol* 12: 250-259, 2002. PubMed PMID: 12118390
 31. DA Roberts, JM Moran, LE Antonuk, Y El-Mohri, **BA Fraass**: Charge trapping at high doses in an Active Matrix Flat Panel Dosimeter. In Proceedings of the IEEE, Seattle 2003.
 32. J Van Dyk, **BA Fraass**, J Cramb, F Ionescu-Farca, JC Rosenwald, P Scalliet, P Andreo, KR Shortt: International Atomic Energy Agency, TRS 430: Commissioning And Quality Assurance Of Computerized Planning Systems For Radiation Treatment Of Cancer. International Atomic Energy Agency, Vienna, 2004
 33. IJ Chetty, M Rosu, DL McShan, **BA Fraass**, RK Ten Haken: The influence of beam fit differences in the comparison of dose calculation algorithms for treatment planning in the lung: Current topics in Monte Carlo treatment planning: Advanced Workshop, McGill University, Montreal CN, May 2004.
 34. DL McShan, **BA Fraass**: IMRT Optimization with MIGA, in Proceedings of the XIVth International Conference on Computers in Radiation Therapy, ed. BY Yi, SD Ahn, EJ Choi, SW Ha (Jeong Publishing, Seoul Korea, 2004), pp. 232-235.
 35. IJ Chetty, M Rosu, F-M Kong, C Lopez, DS Tatro, DL McShan, **BA Fraass**, RK Ten Haken: On the correlation of dose-volume-response using Monte Carlo dose calculation in conformal radiation therapy of lung cancer, in Proceedings of the XIVth International Conference on Computers in Radiation Therapy, ed. BY Yi, SD Ahn, EJ Choi, SW Ha (Jeong Publishing, Seoul Korea, 2004), pp. 457-460.
 36. N Tyagi, B Curran, E Acosta, W Keranen, A Bielajew, **B Fraass**: Integration of Monte Carlo-based Treatment Planning into the Clinic: Issues and Considerations. Proceedings of the XVth International Conference on the Use of Computers in Radiation Therapy. Toronto, ON, Canada, 2007. Vol 1, pp 465-469.
 37. D McShan, M Kessler, **B Fraass**, W Keranen: Knowledge Guided Radiation Therapy (KGRT) - Decision Support and Process Framework. Proceedings of the XVth International Conference on the Use of Computers in Radiation Therapy. Toronto, ON, Canada, 2007. Vol. 1, pp 390-394.
 38. M Matuszak, R TenHaken, E Larsen, **B Fraass**: Uniform Radiobiological Targeting with Adaptive Diffusion Smoothing during IMRT Optimization. Proceedings of the XVth International Conference on the Use of Computers in Radiation Therapy. Toronto, ON, Canada, 2007. Vol. 1, pp 212-216.
 39. W Keranen, M Kessler, D McShan, X Chen, C White, G Fisher, **B Fraass**: Beyond Plans: Enabling Adaptive Therapy with Prescription-based Adaptation. Proceedings of the XVth International Conference on the Use of Computers in Radiation Therapy. Toronto, ON, Canada, 2007. Vol. 2, pp 1-6.
 40. **B Fraass**, D McShan: Optimization of Conformal and IMRT Plans with Direct Segment Optimization. Proceedings of the XVth International Conference on the Use of Computers in Radiation Therapy. Toronto, ON, Canada, 2007. Vol.1, pp 242-246.
 41. **B Fraass**: The Use of Computers in Radiotherapy, Present: Re-Defining and Re-Arranging the Building Blocks of the Radiotherapy Process. Proceedings of the XVth International Conference on the Use of Computers in Radiation Therapy. Toronto, ON, Canada, 2007, Vol 1, p 6.
 42. DL McShan, X Chen, ML Kessler, WM Keranen, **BA Fraass**: Computerized treatment planning directives for adaptive radiation therapy management. World Congress on Bioengineering and Medical Physics, Munich, Germany, 2009.
 43. DL McShan, DW Litzenberg, ML Kessler, **BA Fraass**: Dose-to-date calculation for adaptive therapy. Proceedings of the XVIth International Conference on the Use of Computers in Radiation Therapy. Amsterdam, the Netherlands, June 2010.
 44. JM Moran and **BA Fraass**: Introduction: quality, technology and outcomes in radiation oncology. *Sem Radiat Oncol*. 22: 1-2, 2012. PMID: 22177872.
 45. **BA Fraass** and JM Moran: Quality, technology and outcomes: evolution and evaluation of new treatments and/or new technology. *Sem Radiat Oncol*, 22: 3-10, 2012. PMID: 22177873.
 46. **BA Fraass**: The impact of complexity and computer control on errors in radiation therapy. *Annals of the ICRP* 41: 188-196, 2012. PMID: 23089018.

1. n/a

F. RESEARCH PAPERS - NON-PEER REVIEWED (SUBMITTED)

1. n/a

CHAPTERS

1. Lichter AS, **Fraass BA**, Fredrickson HA, van de Geijn J: "The role of computerized tomography in treatment planning of primary breast cancer." Computer Tomography in Radiation Therapy (ed) CC Ling, CC Rogers and RS Morton. (Raven Press, 1983.) pp. 99-107.
2. Lichter AS, **Fraass BA**, van de Geijn J, Fredrickson HA, Glatstein E: "An overview of clinical requirements and clinical utility of computed tomography (CT) - based radiotherapy treatment planning." Computer Tomography in Radiation Therapy, (ed) CC Ling, CC Rogers and RS Morton. (Raven Press, 1983), pp. 1-21.
3. Lichter AS, **Fraass BA**, Fredrickson HA, van de Geijn J: "The use of computer tomography (CT) in radiation treatment of primary breast cancer." Recent Trends of Radiation Oncology and Related Fields, (ed) Amendola and Amendola, (Elsevier Science Publishing Co. 1983), pp. 249-260.
4. Lichter AS, **Fraass BA**, McShan DL, Diaz RF, TenHaken RK, Perez-Tamayo C, Weeks K: "Radiotherapy treatment planning: Past, present, and future." New Directions in Cancer Treatment, ed. Ian Magrath, Springer Verlag, 1989, pp. 53-84.
5. **Fraass BA**, McShan DL, Weeks KJ: "Computerized beam shaping." Proceedings of the 1988 AAPM Summer School, Computers in Medical Physics, Austin, Texas; 1988, pp. 333-340.
6. **Fraass BA**, McShan DL: "Developments in radiation therapy treatment planning." Proceedings of the 1988 AAPM Summer School, Computers in Medical Physics, San Antonio, Texas; 1988, pp. 303-315.
7. **Fraass BA**: "Clinical application of 3-D treatment planning", in Advances in Radiation Oncology Physics: Dosimetry, Treatment Planning and Brachytherapy, Ed. J.A. Purdy, American Institute of Physics, Woodbury New York, 1992. pp. 967-997.
8. Ten Haken RK, Martel MK, Balter JM, **Fraass BA**: "Clinical implications of heterogeneity corrections for lung cancer treatment". Syllabus: A Catagorical Course in Physics. Three Dimensional Radiation Therapy Treatment Planning (ed) JA Purdy and BA Fraass, (Radiological Society of North America, Oak Brook, IL, 1994), pp 61-66.
9. **Fraass BA**: "Computer controlled three-dimensional delivery systems". Syllabus: A Catagorical Course in Physics. Three Dimensional Radiation Therapy Treatment Planning (ed) JA Purdy and BA Fraass, (Radiological Society of North America, Oak Brook, IL, 1994), pp 93-100.
10. Martel MK, **Fraass BA**, Ten Haken RK, McShan DL: "Conformal therapy with high energy electrons". Syllabus: A Catagorical Course in Physics. Three Dimensional Radiation Therapy Treatment Planning (ed) JA Purdy and BA Fraass, (Radiological Society of North America, Oak Brook, IL, 1994), pp 117-122.
11. Martel MK, **Fraass BA**, McShan DL, Ten Haken RK: "3-D brachytherapy treatment planning". Syllabus: A Catagorical Course in Physics. Three Dimensional Radiation Therapy Treatment Planning (ed) JA Purdy and BA Fraass, (Radiological Society of North America, Oak Brook, IL, 1994), pp 123-130.
12. **Fraass BA**, Martel MK, Ten Haken RK: "Overview of the clinical three-dimensional planning process". Syllabus: A Catagorical Course in Physics. Three Dimensional Radiation Therapy Treatment Planning (ed) JA Purdy and BA Fraass, (Radiological Society of North America, Oak Brook, IL, 1994), pp 17-20.
13. **Fraass BA**, McShan DL: "Three-Dimensional Photon Beam Treatment Planning" in Medical Radiology Diagnostic Imaging and Radiation Oncology, Volume; "Radiation Therapy Physics" (ed) AR Smith, (Springer-Verlag, Berlin, Heidelberg, New York 1995).
14. Ten Haken RK, **Fraass BA**: Quality assurance in 3-D treatment planning. Front Radiat Ther Oncol 29:104-114, 1996.
15. **Fraass BA**, McShan DL, Martel MK: Quality assurance for 3-D treatment planning. In Proceedings of the First International Symposium on Conformal Therapy, Ed. B Emami, JA Purdy, Medical Physics Publ, Madison WI, 1996.

16. **Fraass BA**, McShan DL, Kessler ML, Matrone GM, Weaver W: Computer-controlled radiation therapy. In Proceedings of the First International Symposium on Conformal Therapy, Ed. B Emami, JA Purdy, Medical Physics Publ, Madison WI, 1996.
17. Lawrence TS, TenHaken RK, Sandler HM, Hazuka MB, Robertson JM, Martel MK, Kessler ML, Turrisi AT, **Fraass BA**, Lichter AS: "3D RTP - The University of Michigan experience." In Proceedings of the First International Symposium on Conformal Therapy, Ed. B Emami, JA Purdy, Medical Physics Publ, Madison WI, 1996.
18. Ten Haken RK, **Fraass BA**: Quality assurance in 3-D treatment planning. 3-D Conformal Radiotherapy, Meyer JL, Purdy JA (eds), Front Radiat Ther Oncol, Basel, Karger, Vol 29, pp. 104-114, 1996. PubMed PMID: 8742892
19. Ten Haken RK, Balter JM, Martel MK, **Fraass BA**: Tissue inhomogeneity in the chest: Implications for 3-D treatment planning. Front Radiat Ther Oncol, eds JL Meyer, JA Purdy; S. Karger, Basel, Publ, 29, 180-187 1996. PubMed PMID: 8742898
20. **Fraass BA**: Quality assurance for 3-D treatment planning. In: Teletherapy, Present and Future, TR Mackie and JR Palta (eds): (Advanced Medical Publishing, Madison Wisconsin, 1996), pp. 253-318.
21. McShan DL, **Fraass BA**: "Computer-Controlled Linacs." In: Teletherapy, Present and Future, TR Mackie and JR Palta (eds): (Advanced Medical Publishing, Madison Wisconsin, 1996), pp. 379-402.
22. Ten Haken RK, **Fraass BA**, Lam KL: " Dosimetry and Data Acquisition." In: Teletherapy, Present and Future, TR Mackie and JR Palta (eds): (Advanced Medical Publishing, Madison Wisconsin, 1996), pp. 191-220.
23. Ten Haken RK, **Fraass BA**: "Components of a 3DCRT quality assurance program." In Clinical Implementation of 3-D Radiation Therapy, proceedings of the 1997 ACMP Symposium, JA Purdy and G Starkschall, eds, (Advanced Medical Publishing, Madison WI, 1998) p.
24. Ten Haken RK, **Fraass BA**: Components of a 3-D CRT Quality Assurance Program, in A Practical Guide to 3-D Planning and Conformal Therapy, ed. JA Purdy, G Starkschall, Adv. Med. Publ., Middleton, WI, 1999: pp. 309-322.
25. K-W Jee, **BA Fraass**, DL McShan: Implementation of automatic differentiation tools for multicriteria IMRT optimization. Automatic Differentiation: Applications, Theory and Tools. HM Bucker, G Corliss, P Hovland, U Naumann, B Norris. Springer, 2005.
26. **BA Fraass**, A Eisbruch: Conformal Therapy, Treatment Planning, Treatment Delivery, and Clinical Results. in Clinical Radiation Oncology, 2nd Edition, Ed. L Gunderson & JE Tepper, Elsevier, Philadelphia PA, 2006.
27. **BA Fraass**: "Computer-controlled and intensity modulated radiotherapy", in Quality and Safety in Radiotherapy, eds. T Pawlicki, P Dunscombe, Taylor and Francis Group, New York, NY, May 2010.
28. **BA Fraass**, S Jolly, A Eisbruch: Conformal Therapy and Intensity Modulated Radiation Therapy (IMRT), Treatment Planning, Treatment Delivery, and Clinical Results. in Clinical Radiation Oncology, 3rd Edition, Ed. L Gunderson & JE Tepper, Elsevier, Philadelphia PA, 2011
29. **BA Fraass**, JR Palta, SW Cagle, AN Viswanathan, TL DeWeese, MJ Rivard, SA Rosenthal, DE Wazer, DJ Rice, SE Hayden, K McGraner: "Management and Assurance of Quality in Radiation Oncology", in Safety Is No Accident: a Framework for Quality Radiation Oncology and Care. Ed. AL Zeitman, JR Palta, ML Steinberg, electronically published, American Society of Radiation Oncology, 2012.
30. **BA Fraass**, A Eisbruch, M Feng: Conformal Therapy and Intensity Modulated Radiation Therapy (IMRT), Treatment Planning, Treatment Delivery, and Clinical Results. in Clinical Radiation Oncology, 4th Edition, Ed. L Gunderson & JE Tepper, Elsevier, Philadelphia PA, 2015.

CHAPTERS (IN PRESS)

LETTERS TO THE EDITOR

1. DW Litzenberg, JM Moran, **BA Fraass**: Comment on "Dosimetric evaluations of the interplay effect in respiratory-gated intensity-modulated radiation therapy" [Med. Phys. 36, 893-903, 2009.]. Med Phys 36: 2340, 2009. PubMed PMID: 19610323.

REVIEWS

EDITORIALS

PAPERS IN PREPARATION (RESEARCH COMPLETED)

ABSTRACTS

1. Baer DR, **Fraass BA**, Riehl DH, Simmons RO: Lattice parameters and phase transitions in solid CD₄. Bull Am Phys Soc 21:42, 1976.
2. **Fraass BA**, Gates JV, Simmons RO: Thermal vacancies in solid 4He. American Physical Society, San Diego, California. Bull Am Phys Soc, 22:380, 1977.
3. **Fraass BA**, Heald SM, Simmons RO: Growth of several quantum crystals: CD₄, 4He and 3He. Fifth International Conference on Crystal Growth, Boston, Massachusetts, 1977.
4. **Fraass BA**, Heald SM, Simmons RO: Thermal vacancies in solid helium. International Quantum Crystals Conference, Ft. Collins, Colorado, 1977.
5. **Fraass BA**, Simmons RO: Thermal vacancies in BCC solid mixtures of 3He and 4He. American Physical Society, Washington, D.C. Bull Am Phys Soc, 25, 1980.
6. Simmons RO, **Fraass BA**: Phase separation of solid mixtures of 3He and 4He. American Physical Society, Washington, D.C. Bull Am Phys Soc, 25, 1980.
7. **Fraass BA**, Tepper JE: Clinical use of a match-line wedge for adjacent megavoltage radiation field matching. American Association of Physicists in Medicine, Boston, Massachusetts. Med Phys, 8:546, 1981.
8. **Fraass BA**, Roberson PL, Glatstein E: Whole skin electron irradiation: Patient dose distribution. Radiological Society of North America, Chicago, Illinois, 1981.
9. Granfors PR, **Fraass BA**, Simmons RO: Thermal vacancies in BCC 4He. American Physical Society, Dallas, Texas. Bull Am Phys Soc, 27, 1982.
10. **Fraass BA**: Characterization of dose outside megavoltage beams. American Association of Physicists in Medicine, New Orleans, Louisiana. Med Phys, 9:618-169, 1982.
11. **Fraass BA**, Miller RW, van de Geijn J, Kinsella TJ, Sindelar WF: Physical aspects of intraoperative radiation therapy at the National Cancer Institute. American Association of Physicists in Medicine, New York, New York. Med Phys, 10:529, 1983.
12. **Fraass BA**, Kinsella TJ, Glatstein E: Peripheral dose to the testes: Design and clinical use of an effective gonadal shield. American Society of Therapeutic Radiologists, Los Angeles, California. Int J Rad Oncol Biol Phys, 9 (Suppl 1):115, 1983.
13. **Fraass BA**, Roberson PL, Lichter AS: Dose to contralateral breast due to primary breast irradiation. American Society of Therapeutic Radiologists, Los Angeles, California. Int J Rad Oncol Biol Phys, 9 (Suppl. 1):106, 1983.
14. Kinsella TJ, Shapiro E, **Fraass BA**, Sherins RJ, Testicular injury following high dose conventionally fractionated irradiation. Int J Rad Oncol Biol Phys, 9 (Suppl 1):136, 1983.
15. McKenna G, Klink A, **Fraass BA**, van de Geijn J, Yeakel K, Lichter AS: Influence of lung density corrections in the treatment of carcinomas of the esophagus. Int J Rad Oncol Biol Phys, 9 (Suppl 1):161, 1983.
16. **Fraass BA**: Dose outside radiation fields: Implications for gonads, eyes, and contralateral breast. AAPM Mid-Atlantic Chapter Meeting, Bethesda, Maryland, February 1984.
17. **Fraass BA**, Crecy RH: Radiotherapy beam data: Automatic acquisition, analysis, and comparison to calculated dose distribution. Radiological Society of North America, Washington, D.C.. Radiology, 153 (P):64, 1984.
18. **Fraass BA**, Miller RW, van de Geijn J: Dosimetric aspects of high energy photon and electron beams from a 22 MeV microtron, Presented as Paper Exhibit. First Inter-American Meeting of Medical Physics. Chicago, Illinois. Med Phys, A11(3):360, 1984.
19. van de Geijn J, **Fraass BA**, Miller RW: A simple model for dose profiles from 60Co to 15 MV X-ray beams. Presented as Paper Exhibit. First Inter-American Meeting of Medical Physics, Chicago, Illinois. Med Phys, 11(3):362, 1984.

20. Miller RW, **Fraass BA**, van de Geijn J: Practical aspects of a 22 MeV microtron. Presented as a Paper Exhibit. First Inter-American Meeting of Medical Physics, Chicago, Illinois. Med Phys, 11(3):367, 1984.
21. McShan DL, **Fraass BA**: Radiation therapy planning using computerized interactive portal simulation. Computer Assisted Radiology, Berlin, Germany, June 26-29, 1985.
22. McShan DL, **Fraass BA**, Ten Haken RK, Jost RJ: Three-dimensional electron beam dose calculations and dosimetric evaluations. American Association of Physicists in Medicine, Seattle, Washington. Med Phys, 12(4):507, 1985.
23. McShan DL, **Fraass BA**, Roberts WA, Eyler RW: Three-dimensional graphics for evaluating electron beam treatment plans. American Association of Physicists in Medicine, Seattle, Washington. Med Phys, 12:509, 1985.
24. Ten Haken RK, **Fraass BA**, Jost RJ: Electron beam measurements: The NACP parallel plate chamber vs other techniques. American Association of Physicists in Medicine, Seattle Washington. Med Phys, 12:518, 1985.
25. Ten Haken RK, **Fraass BA**: Scaling electron beam relative depth ionization curves from polystyrene to water. Works-in-progress. American Association of Physicists in Medicine, Seattle, Washington. Med Phys, 12(5):677, 1985.
26. **Fraass BA**, McShan DL, Diaz RF, Lichter AS, Ten Haken RK: Aisen A and Glazer G, Integration of magnetic resonance imaging into radiation therapy treatment planning. American Society for Therapeutic Radiology and Oncology, Miami Beach, Florida. Int J Rad Biol Phys, 11 (Suppl 1):164, 1985.
27. **Fraass BA**, Lichter AS, Yeakel KS, Yanke BR, Diaz RF, van de Geijn J, Findley PA: Effect of inhomogeneity correction on external beam therapy for primary breast cancer. The Radiological Society of North America, Chicago, Illinois. Radiology, 157(P): 205, 1985.
28. McShan DL, **Fraass BA**, Lichter AS, Roberts WA, Eyler RW: Three-dimensional graphics for evaluating external beam treatment plans. The Radiological Society of North America, Chicago, Illinois. Radiology, 157(P): 179, 1985.
29. Ten Haken RK, **Fraass BA**: Relative electron beam measurements: Scaling depths in clear polystyrene to equivalent depths in water. American Association of Physicists in Medicine, Seattle, Washington. Medical Physics, 12, 677, 1985.
30. Ten Haken RK, **Fraass BA**, Jost RJ: Practical methods of electron depth-dose measurement compared to use of the NACP design chamber in water. American Association of Physicists in Medicine, Seattle, WA Medical Physics, 12, 518, 1985.
31. Ten Haken RK, Diaz RF, McShan DL, **Fraass BA**, Taren JA, Hood TW: Manual vs computerized planning and dosimetry for stereotactic brain implants. Twenty-Seventh Annual Meeting of the American Society for Therapeutic Radiology and Oncology, Miami Beach, Florida. Int J Rad Biol Phys, 11(Suppl.1):105, 1985.
32. McShan DL, **Fraass BA**: Geometrical uncertainty in beams-eye-view treatment planning. NCI Workshop: Geometric Accuracy and Reproducibility of Patient Treatment Fields in Radiation Therapy. Stony Brook, September 1985.
33. Ten Haken RK, **Fraass BA**: Indirect measurement of conversion factors for electron beam energy determination from d(50%) ionization readings. American Association of Physicists in Medicine, Lexington, Kentucky. Medical Physics, 13:780, 1986.
34. McShan DL, **Fraass BA**, Weeks KJ: Computerized beam portal simulation for radiation therapy planning. American Association of Physicists in Medicine, Lexington, Kentucky. Medical Physics, 13:575, 1986.
35. **Fraass BA**, McShan DL, Ten Haken RK, Weeks KJ: A new 3-D edge-based dose calculation model for arbitrarily-shaped fields and blocks. American Association of Physicists in Medicine, Lexington, Kentucky. Medical Physics, 13:591, 1986.
36. Ten Haken RK, Lichter AS, **Fraass BA**: The use of a 10 MV photon beam for isocentric breast treatments; beam spoilers, bolus and more. American Association of Physicists in Medicine, Lexington, Kentucky. Medical Physics, 13:599, 1986.
37. Herman JS, McShan DL, **Fraass BA**, Lichter AS: Usefulness of round-couch CT data for radiation therapy treatment planning: Investigation of a Warping Algorithm Designed to Restore Flatness, Radiological Society of North America, Chicago, Illinois. Radiology, 161(P): 217, 1986.
38. Ten Haken RK, **Fraass BA**: Electron beam energy determination from d(50%) ionization measurements; conversion factors, divergence corrections, etc. Twenty-Eighth Annual

Meeting of the American Association of Physicists in Medicine, Lexington, Kentucky. Med Phys, 13:780, 1986.

39. **Fraass, BA:** Practical Implications of Three-dimensional Radiation Therapy Treatment Planning. Radiological Society of North American, Chicago, Illinois. Radiology, 161(P): 91, 1986.
40. Ten Haken RK, McShan DL, Diaz RF, **Fraass BA**, Taren JA, Hood TW: Computerized planning: 3-D display and dosimetric evaluation of stereotactic brain implants. 6th Annual Meeting of European Society for Therapeutic Radiation and Oncology, Lisbon, Portugal, May, 1987, Abstract 147.
41. Ten Haken RK, McShan DL, Diaz RF, **Fraass BA**, Vine AK: CT planning for 125-I ocular melanoma plaques. Twenty-Ninth Annual Meeting of the American Association of Physicists in Medicine, Detroit, Michigan. Med Phys, 14:475, 1987.
42. Ten Haken RK, Lichter AS, McShan DL, **Fraass BA**, Perez-Tamayo C, Diaz RF, Weeks KJ: Reduction of dose to normal tissues through practical use of 3-D treatment planning. 6th Annual Meeting of European Society for Therapeutic Radiation and Oncology, Lisbon, Portugal, May, 1987, Abstract 281.
43. **Fraass BA**, McShan DL: 3-D treatment planning: I. Overview of a clinical planning system, Ninth International Conference on the Use of Computers in Radiation Therapy, Tilburg, Netherlands, June, 1987.
44. McShan DL, **Fraass BA**: 3-D treatment planning: II. Integration of gray scale images and solid surface graphics, Ninth International Conference on the Use of Computers in Radiation Therapy, Tilburg, Netherlands, June, 1987.
45. **Fraass BA**, McShan DL, Weeks KJ: 3-D treatment planning: III. Complete beam's-eye-view planning capabilities, Ninth International Conference on the Use of Computers in Radiation Therapy, Tilburg, Netherlands, June, 1987.
46. McShan DL, Ten Haken RK, **Fraass BA**: 3-D treatment planning: IV. Integrated brachytherapy planning, Ninth International Conference on the Use of Computers in Radiation Therapy, Tilburg, Netherlands, June, 1987.
47. **Fraass BA**, McShan DL, Ten Haken RK, Hutchins KM: 3-D treatment planning: V. A fast 3-D photon calculation model, Ninth International Conference on the Use of Computers in Radiation Therapy, Tilburg, Netherlands, June, 1987. I.A.D. Bruinvis, et al. Eds. (Elsevier, New York, 1987) p. 521-524.
48. McShan DL, **Fraass BA**: Integration of multi-modality imaging for use in radiation therapy treatment planning, Computer Assisted Radiology, Berlin, July, 1987.
49. Weeks KJ, Hardybala SS, Hargreaves EA, Hutchins KM, **Fraass BA**: Gypsum mixtures for compensator construction. American Association of Physicists in Medicine, Detroit, Michigan, August, 1987. Med Phys, 15(3):410-414, 1988.
50. Ten Haken RK, McShan DL, **Fraass BA**: CT planning for 125-I ocular melanoma plaques. American Association of Physicists in Medicine, Detroit, Michigan, August, 1987. Med Phys, 14:475, 1987.
51. **Fraass BA**: A critical look at MRI for treatment planning, American Association of Physicists in Medicine, Detroit, Michigan, August, 1987. Med Phys, 14: , 1987.
52. McShan DL, Matrone GM, **Fraass BA**, Lichter AS: A large screen digitizer system for radiation therapy planning. Med Phys, 14: 459, 1987.
53. McShan DL, **Fraass BA**: Increased 3-D dose calculation speed using octrees and fan beam geometry. Med Phys, 14: 452, 1987.
54. **Fraass BA**, Weeks KJ, McShan DL, Hargreaves EA, Hardybala SS, Lichter AS: Clinical implementation of an automated system for block and compensator fabrication. American Society for Therapeutic Radiology and Oncology, Boston, MA. Int J Rad Oncol Biol Phys, 13(Suppl.1):199-200, 1987.
55. Ten Haken RK, Perez-Tamayo C, Tesser RJ, McShan DL, **Fraass BA**, Lichter AS: A static conformational external beam technique for boost treatment of the prostate. American Society for Therapeutic Radiology and Oncology, Boston, MA. Int J Rad Oncol Bio Phys, 1987, 13(Suppl.1):201, 1987.
56. McShan DL, **Fraass BA**, Lichter AS: Treatment plan verification using portal images and beam's eye view treatment planning. American Society for Therapeutic Radiology Oncology, Boston, MA Int J Rad Oncol Bio Phys 13(Suppl.1):199, 1987.

57. Brusio C, Perez-Tamayo C, McShan DL, Dworzanin M, **Fraass BA**: Results of beam's eye view treatment planning for esophageal carcinomas. American Society for Therapeutic Radiology and Oncology, Boston, MA. *Int J Rad Oncol Bio Phys*, 13(Suppl.1):195, 1987.
58. La Rouere J, Perez-Tamayo C, **Fraass B**, Tesser R: Optimal coverage of peritoneal surface in whole abdominal radiation for ovarian neoplasms. American Society for Therapeutic Radiology and Oncology, Boston, MA. *Int J Rad Oncol Bio Phys*, 13(Suppl.1):, 1987.
59. Weeks KJ, Perez-Tamayo C, Tesser RJ, Lichter AS, Ten Haken RK, **Fraass BA**, McShan DL: 3D cell survival analysis of external beam boost techniques for treatment of stage c prostate carcinoma. *Int J Rad Oncol Biol Phys* 13 (Suppl 1), 1987.
60. **Fraass BA**: 3-D treatment planning for breast cancer. 8th Annual Current Approaches to Radiation Oncology, Biology and Physics, San Francisco, CA, March 1988.
61. Ten Haken RK, McShan DL, **Fraass BA**, Archer PG, Lichter AS: Practical use of 3-D treatment planning for non-coplanar beams in the abdomen. Thirtieth Annual Meeting of the American Society for Therapeutic Radiology and Oncology, New Orleans, Louisiana. *Int J Rad Oncol Bio Phys*, 15(Suppl.1):144, 1988.
62. **Fraass BA**, McShan DL, Roberts WA: Constraints in 3-D treatment planning system design. World Congress on Medical Physics and Biomedical Engineering, San Antonio, Texas, August 1988.
63. Perez-Tamayo C, Brusio C, McShan DL, Dworzanin M, **Fraass BA**: Results of beam's eye view treatment planning for esophageal carcinomas. *Int J Rad Oncol Biol Phys*, Vol. 13(1)19, 1988.
64. Schoeppel SL, Weeks KJ, Lichter AS, McShan DL, **Fraass BA**, LaVigne ML, Perez-Tamayo C, Roberts J, Hopkins M: Clinical application of a CT-compatible version of the fletcher system intracavitary applicator. Presented at American Society of Therapeutic Radiology and Oncology, New Orleans, October 1988. *Int J Rad Oncol Biol Phys*, 15(Suppl 1):, 1988.
65. Schoeppel SL, **Fraass BA**, Lichter AS, LaVigne ML, Herman JS: Radiation pneumonitis after treatment with tangential breast fields: A dose volume analysis. European Society for Therapeutic Radiology and Oncology. Presented, September, 1988.
66. **Fraass BA**: Use of MRI for treatment planning. 74th Scientific Assembly and Annual Meeting, Radiological Society of North America, Chicago, IL, November 1988. *Radiology*, 1988.
67. Ten Haken RK, McShan DL, Gerhardsson A, Thornton AS, **Fraass BA**: Use of radio-opaque markers in automated patient set-up. American Association of Physicists in Medicine, Memphis, TN. *Med Phys*, 16:678, 1989.
68. Ten Haken RK, Aisen A, **Fraass BA**, Yanke BR, Gerhardsson A, Perez-Tamayo C, Lichter AS: Design of MRI scan protocols for use in 3-D, CT-based treatment planning. Seventeenth International Congress of Radiology, July 1-8, 1989, Paris, France. Abstract No. 3415.
69. McShan DL, **Fraass BA**: Ten Haken RK and LaVigne ML, Verification of a 3-D electron beam calculational algorithm, Thirty-First Annual Meeting of the American Association of Physicists in Medicine, Memphis, Tennessee. *Med Phys*, 16:453, 1989.
70. Gerhardsson A, **Fraass BA**, McShan DL, Ten Haken RK: Development of quality assurance tests for 3-D treatment planning. Thirty-First Annual Meeting of the American Association of Physicists in Medicine, Memphis, Tennessee. *Med Phys*, 16:673, 1989.
71. Ten Haken RK, McShan DL, Gerhardsson A, Thornton AS, **Fraass BA**: Use of radio-opaque markers in automated patient set-up. Thirty-First Annual Meeting of the American Association of Physicists in Medicine, Memphis, Tennessee. *Med Phys*, 16:678, 1989.
72. McShan D, Lewis J, **Fraass B**, Lichter AS: 3-D graphics and dose display for conformal radiation therapy planning. International Congress of Radiology, Paris, France, July 1989.
73. Schoeppel SL, LaVigne M, **Fraass BA**, McShan DL, Ten Haken RK, Roberts JA, Hopkins MP, Lichter AS, Perez-Tamayo C, Noffsinger D: CT-based three-dimensional treatment planning for intracavitary cervix implants. Western Organization of Gynecology Oncology Annual Meeting, May, 1989.
74. Schoeppel SL, LaVigne ML, **Fraass BA**, McShan DL: Source localization for computed tomography (CT) based dosimetry of gynecologic brachytherapy. Presented Twelfth Annual Meeting of the American Endocurietherapy Society. *Endocurie Hypertherm Oncol*, 5(4):245, 1989.
75. Antonuk LE, Yorkston J, Boudry J, **Fraass BA**, McShan DL, Ten Haken RK, Longo, MJ, Street RA: Real-time megavoltage imaging with an amorphous silicon detector array. 32nd Annual Meeting of the American Association of physicists in Medicine, St. Louis, Missouri. *Med Phys*, 17:554, 1990.

76. Schoeppel SL, LaVigne ML, McShan DL, **Fraass BA**: Comparison of the international commission of radiation units and measurements (ICRU) 60 Gray (Gy) reference volume and the three-dimensional (3-D) calculated 60 Gy volume. ESTRO, Annual Meeting on Brachytherapy, May 20-25, 1990.
77. Stern RL, **Fraass BA**, Gerhardtsson A, McShan DL, Kessler ML: Generation of measurement-based 3D dose grids for 3D treatment planning QA. AAPM, 32nd Annual Meeting, St. Louis, Missouri, July 22-26, 1990. Med Phys, 1990.
78. **Fraass BA**: A unified system for computer-controlled conformal therapy. 32nd AAPM Annual Meeting, St. Louis, Missouri, July, 1990. Med Phys, 1990.
79. Sandler HM, Thornton AS, Ten Haken RK, McShan DL, **Fraass BA**, LaVigne ML, Yanke BR: The clinical utility of MRI in 3-D treatment planning of brain neoplasms. ASTRO, Miami Beach, Florida, October 15-20, 1990. Int J Radiat Oncol Biol Phys, 19(Suppl. 1):206, 1990.
80. Ten Haken RK, Thornton AS, Sandler HM, Quint DJ, LaVigne ML, Yanke BR, **Fraass BA**, Kessler ML, McShan DL: Quantitative assessment of the addition of MRI to CT-based 3D treatment planning of brain tumors. 9th annual meeting of ESTRO, Montecatini Terme, Italy, September 12-15, 1990, Abstract 171.
81. Schoeppel SL, LaVigne ML, McShan DL, **Fraass BA**, Roberts JA: Three-dimensional (3-D) treatment planning of intracavitary gynecologic implants: Analysis of ten cases and implications for dose specification. 32nd Annual Meeting of ASTRO, October, 1990. Int J Rad Oncol Biol Phys, 1990.
82. **Fraass BA**, Lichter AS: Computer-controlled radiation therapy and 3-D treatment planning. American Society of Therapeutic Radiology and Oncology Refresher Course, Miami Beach, Florida, October 1990. Int J Rad Oncol Biol Phys, 1990.
83. Thornton AF, Sandler HM, Ten Haken RK, McShan DL, **Fraass BA**, LaVigne ML, Yanke BR: The clinical utility of magnetic resonance imaging in 3-dimensional treatment planning of brain neoplasms. Annual meeting of ASTRO, Miami Beach, Florida, October, 1990. Int J Rad Oncol Biol Phys, 19(Suppl 1):206, 1990.
84. **Fraass BA**: Testing the utility of clinical 3-D treatment planning. World Congress on Medical and Biomedical Engineering, Kyoto, Japan, July, 1991.
85. **Fraass BA**, McShan DL: Analysis and performance of the edge/octree photon calculation model. World Congress on Medical and Biomedical Engineering, Kyoto, Japan, July, 1991.
86. **Fraass BA**, McShan DL, Kessler ML, Lewis JD, Matrone GM, Drehobl SV, Weaver TA: An approach to software for computer-controlled conformal therapy. World Congress on Medical and Biomedical Engineering, Kyoto, Japan, July, 1991.
87. McShan DL, Kessler ML, **Fraass BA**: Interactive design methodologies for conformal radiation therapy. AAPM 33rd Annual Meeting, San Francisco, California, July, 1991. Med Phys, 1991.
88. Kessler ML, Ten Haken RK, **Fraass BA**, McShan DL: Expanding the use and effectiveness of dose-volume histograms for 3-D treatment planning. AAPM 33rd Annual Meeting, San Francisco, California, July, 1991. Med Phys, 18:611, 1991.
89. **Fraass BA**, Lichter AS: Computer-controlled radiation therapy and 3-D treatment planning. Refresher Course at the American Society of Therapeutic Radiology and Oncology Annual Meeting, Washington D.C., November 1991. Int J Rad Oncol Biol Phys, 1991.
90. Martel MK, **Fraass BA**, McShan DL: Study of limits of applicability of ETAR-like inhomogeneity correction methods. AAPM 34th Annual Meeting, Calgary, Alberta, Canada, August, 1992. Med Phys, 1992.
91. **Fraass BA**, McShan DL, Kessler ML, Lewis JD, Matrone G, Weaver TA: A vendor-independent system for control of the set-up, treatment and verification processes used in computer-controlled conformal therapy. AAPM 34th Annual Meeting, Calgary, Alberta, Canada, August, 1992. Med Phys, 1992.
92. **Fraass BA**, McShan DL, Yanke BR, Matrone GM, Lichter AS: Analysis of the 3-d treatment planning process: 750 patients clinically planned in 1991. Presented at the 34th Annual Meeting of ASTRO, San Diego, California, November 1992. Int J Radiat Oncol Biol Phys, 1992.
93. **Fraass BA**: Computer-controlled radiation therapy and 3-D treatment planning. Refresher course at the American Society of Therapeutic Radiological Oncology Annual Meeting, San Diego California, November 1992. Int J Radiat Oncol Biol Phys, 1992.
94. Martel MK, Ten Haken RK, Hazuka MB, Turrisi AT, **Fraass BA**, Lichter AS: Dose-volume histogram and 3-D/CT treatment planning evaluation of patients with radiation pneumonitis. Presented at the 34th Annual ASTRO Meeting in San Diego, California, November 1992. Int J Radiat Oncol Biol Phys, 24(Suppl 1):175, 1992.

95. Lichter AS, **Fraass BA**: Image-guided three-dimensional treatment planning. Refresher course at the annual Radiological Society of North America Meeting in Chicago, Illinois, December 1992. *Radiology*, 1992.
96. **Fraass BA**, McShan DL, Martel MK: Quality assurance for 3-D treatment planning, First International Symposium on Conformal Therapy, St. Louis MO, April 1993.
97. **Fraass BA**, McShan DL, Kessler ML, Matrone GM, Weaver W: Computer-controlled radiation therapy, First International Symposium on Conformal Therapy, St. Louis MO, April 1993.
98. **Fraass BA**, McShan DL, Ten Haken RK, Martel MK, Kessler ML, Lichter AS: Segmental conformal therapy treatment with the racetrack microtron. International Congress of Radiation Oncology, Kyoto, Japan, June 1993.
99. Antonuk LE, **Fraass BA**, Ten Haken RK, Huang W, Lam KL, Yorkston J: A real-time, flat-panel composite imager for portal verification using diagnostic and megavoltage x-rays. International Congress of Radiology, June 1993, Kyoto, Japan.
100. Martel MK, **Fraass BA**, McShan DL, Eisbruch A: Ovoid shielding in a CT-compatible GYN Applicator: Dose distributions and effects on DVHs. *Medical Physics* 20(3):879; 1993.
101. Ten Haken RK, McShan DL, Balter JM, **Fraass BA**, Lam KL, Martel MK, Moran JM, Thompson AV: Quality control programs for computer controlled treatment units. International Conference on Computers Radiation Therapy, March 1994 Manchester, UK.
102. McShan DL, **Fraass BA**: UM-CCRS/SP: Sequence processor for computer-controlled radiotherapy treatment delivery. International Conference on Computers in Radiation Therapy, March 1994, Manchester, UK.
103. **Fraass BA**, Martel MK, McShan DL: Tools for dose calculation verification and QA for conformal therapy treatment techniques. International Conference on Computers in Radiation Therapy, March 1994, Manchester, UK.
104. Kessler ML, McShan DL, **Fraass BA**: Graphical simulator for design and verification of computer controlled treatment delivery. International Conference on Computers in Radiation Therapy, March 1994, Manchester, UK.
105. **Fraass BA**, McShan DL: An electronic chart for computer-controlled conformal therapy. International Conference on Computers in Radiation Therapy, March 1994, Manchester, UK.
106. Ten Haken RK, Martel MK, Lawrence TS, Kessler ML, **Fraass BA**: Use of dose-volume-response factors in conformal high-dose therapy studies. International Conference on Computers in Radiation Therapy, March 1994, Manchester, UK.
107. Hazuka MB, Turrisi III AT, Martel MK, Ten Haken RK, Littles JF, Lichter AS, **Fraass BA**: Dose-escalation in non-small cell lung cancer (NSCLC) using conformal 3-dimensional radiation treatment planning (3DRTP): Preliminary results of phase I study. Presented at the annual meeting of ASCO, May 14-17, 1994, Dallas, Texas.
108. Hazuka MB, Turrisi AT, Martel MK, Ten Haken RK, Littles JF, Lichter AS, **Fraass BA**: Dose-escalation in non-small cell lung cancer using conformal 3-dimensional radiation treatment planning: Preliminary results of phase I study. 7th World Conference on Lung Cancer, June 26-July 1, 1994, Colorado Springs.
109. Martel MK, Ten Haken RK, Hazuka MB, Kessler ML, Turrisi AT, **Fraass BA**: Estimation of tumor control probability model parameters from a database of 3-D dose distributions of non small cell lung cancer patients. 7th World Conference on Lung Cancer, June 26-July 1, 1994, Colorado Springs.
110. **Fraass BA**, Marsh L, Martel MK, Forster K, McShan DL, Ten Haken RK: Multileaf collimator-based intensity modulation for conformal therapy. American Association of Physicists in Medicine, July 1994, Anaheim, CA. *Med Phys* 21:1008, 1994.
111. Forster KM, Martel MK, Higgins P, **Fraass BA**, Ten Haken RK, Sandler HM: Radiosurgery using segmental conformal therapy with a MLC. American Association of Physicists in Medicine, July 1994, Anaheim, CA. *Med Phys* 21:919, 1994.
112. Forster KM, Martel MK, Higgins P, **Fraass BA**: MLC-based radiosurgery: Is tertiary collimation necessary? American Association of Physicists in Medicine, July 1994, Anaheim, CA. *Med Phys* 21:891, 1994.
113. Moran JM, Martel MK, **Fraass BA**: Evaluation of multileaf collimator dose distributions with and without applicators for electron beams. American Association of Physicists in Medicine, July 1994, Anaheim, CA. *Med Phys* 21:921, 1994.
114. Martel MK, Lam KL, Forster KM, Muthuswamy M, Balter J, Stern R, **Fraass BA**: Commissioning and quality assurance tests for a laser film digitizer used in beam data measurements.

- American Association of Physicists in Medicine, July 1994, Anaheim, CA. Med Phys 21:934, 1994.
115. Thompson AV, Lam KL, Balter JM, McShan DL, Martel MK, Weaver TA, **Fraass BA**, Ten Haken RK: Mechanical and dosimetric quality control for computer controlled radiotherapy treatment units. American Association of Physicists in Medicine, July 1994, Anaheim, CA. Med Phys 21:900, 1994.
 116. **Fraass BA**: Conformal therapy and 3-D treatment planning. American Association of Physicists in Medicine, July 1994, Anaheim, California. Med Phys 21: 1004-1005, 1994.
 117. **Fraass BA**: Quality assurance for computer-controlled treatment delivery. American Association of Physicists in Medicine, July 1994, Anaheim, California. Med Phys 21: 1010, 1994.
 118. **Fraass BA**: 3-D treatment planning for computer controlled conformal therapy. 13th European Society for Therapeutic Radiology and Oncology, September 1994, Granada, Spain.
 119. **Fraass BA**, Bruinvis IAD, Lanson JH, Wittkamper FW: Photon and electron contributions to the dose in the buildup regions for fields used in conformal therapy. 13th European Society for Therapeutic Radiology and Oncology, September 1994, Granada, Spain.
 120. Martel MK, Archer P, Marsh L, Sandler HS, Roa W, Hazuka M, **Fraass BA**: 3-D dose distribution analysis for visual pathway structures for patients with advanced paranasal sinus tumors. 13th European Society for Therapeutic Radiology and Oncology, September 1994, Granada Spain.
 121. **Fraass BA**: 3-D conformal radiation therapy - dose delivery. American Society for Therapeutic Radiology and Oncology, October 1994, San Francisco, California. Int J Radiat Oncol Biol Phys 30(Suppl 1), 1994.
 122. Forster KM, Martel MK, Ten Haken RK, Sandler HM, Higgins P, **Fraass BA**: Radiosurgery using segmental conformal therapy with a double focused multileaf collimator. American Society for Therapeutic Radiology and Oncology, October 1994, San Francisco. Int J Radiat Oncol Biol Phys 30(suppl 1) 1994.
 123. **Fraass BA**: Computer controlled 3-D conformal delivery systems. Radiological Society of North America, November 1994, Chicago, Illinois. Radiology 193:91,1994.
 124. **Fraass BA**, Ten Haken RK, Martel MK: Overview of the clinical 3-D planning process. Radiological Society of North America, November 1994, Chicago, Illinois. Radiology 193:55, 1994.
 125. Ten Haken RK, Martel MK, Balter JM, **Fraass BA**: Clinical implications of heterogeneity corrections for lung cancer treatment. Radiological Society of North America, Chicago, November 1994, Chicago IL. Radiology 193:74, 1994.
 126. Martel MK, **Fraass BA**, Ten Haken RK, McShan DL: Conformal therapy with high energy electrons. Radiological Society of North America, Chicago, IL, November 1994. Radiology 193:100, 1994.
 127. Martel MK, **Fraass BA**, McShan DL, Ten Haken RK: 3-D brachytherapy treatment planning. Radiological Society of North America, Chicago, 1994.
 128. Moran JM, Martel MK, **Fraass BA**: Shaped electron beams using a multileaf collimator. American Association of Physicists in Medicine, Boston, Massachusetts, July 1995.
 129. Forster KM, Sandler HM, **Fraass BA**: MLC based segmental intensity modulation: How many segments are necessary? American Association of Physicists in Medicine, Boston, Massachusetts, July 1995.
 130. Bruinvis IAD, **Fraass BA**, Lanson JH: Contribution of electron dose in the build-up region of conformal photon fields. American Association of Physicists in Medicine, Boston, Massachusetts, July 1995.
 131. Balter J, Martel M, Sandler H, Ross D, Forster K, McShan D, **Fraass B**, Ten Haken R: Clinical implementation of radiosurgery using a multileaf collimator and a computer controlled radiotherapy system. Int J Rad Oncol Biol Phys 32(Suppl 1):169, 1995.
 132. Balter J, Ross D, Ten Haken RK, Martel MK, McShan DM, **Fraass BA**, Sandler HM. Clinical implementation of radiosurgery using a conventional multileaf collimator and a computer controlled radiotherapy system. Proc Linac Radiosurgery - 1995:84, 1995.
 133. Graves MN, Thompson AV, Martel MK, McShan DL, **Fraass BA**: Radiation field size calibration for rounded leaf-end MLC systems. American Association of Physicists in Medicine, Philadelphia, Pennsylvania, July 1996.

134. El-Mohri Y, Antonuk LE, Yorkston J, **Fraass BA**, Jee K, Siewerdsen JH, Huang W, Scarpine VE: Relative dosimetry using an active matrix flat-panel imager. American Association of Physicists in Medicine, Philadelphia, Pennsylvania, July 1996.
135. Wygoda A, **Fraass BA**, McShan DL: Transfer and conversion of conformal treatment plans between MLC and non-MLC machines. American Association of Physicists in Medicine, Philadelphia, Pennsylvania, July 1996.
136. Moran J, **Fraass BA**, Martel MK, McShan DL: Accuracy of 3-D pencil beam dose calculations for MLC-shaped electron fields. American Association of Physicists in Medicine, Philadelphia, Pennsylvania, July 1996.
137. Miften MM, **Fraass BA**, McShan DL: Analysis of the accuracy of various approximations in convolution dose calculations. American Association of Physicists in Medicine, Philadelphia, Pennsylvania, July 1996.
138. Miften MM, Larsen EW, Bruinvis IAD, **Fraass BA**: The method of moments for high energy electron beam dose calculations in homogeneous media. American Association of Physicists in Medicine, Philadelphia, Pennsylvania, July 1996.
139. **Fraass BA**: 3-D Conformal Radiation Therapy - Part II: Computer-controlled 3-D treatment delivery, 38th Annual American Society for Therapeutic Radiology and Oncology, Los Angeles Convention Center, Los Angeles, California, October 1996.
140. Lee SW, **Fraass BA**, Herbort K, Marsh LH, Gebarski SS, Martel MK, Radany EH, Lichter AS, Sandler HM: Patterns of failure following high dose 3-D conformal radiotherapy for high grade astrocytomas--a quantitative dosimetric study. American Society for Therapeutic Radiology and Oncology, Los Angeles, California, October 1996.
141. Roberson PL, Ho M, Narayana V, McLaughlin PW, **Fraass BA**: Clinical implementation of dose compensators for external beam treatments, 15th Annual European Society for Therapeutic Radiology and Oncology, Vienna, Austria, September, 1996. Radiotherapy Oncology 40: S113, 1999
142. **Fraass BA**, Bruinvis IAD: Calculation of accurate dose distributions in the buildup region of conformal fields using a simple model for electron contamination, 15th Annual European Society for Therapeutic Radiology and Oncology, Vienna, Austria, September, 1996. Radiotherapy Oncology 40: S9, 1996.
143. Ross DA, Balter JM, McShan DL, Archer P, Forster KM, **Fraass BA**, Sandler HA, Ten Haken RK, Martel MK. Initial experience with radiosurgery delivered using a linear accelerator with multileaf collimation and a computer control system. Abstract Society of Neurosciences (22): 764, 1996.
144. Muthuswamy MS, Martel MK, Lam KL, Ten Haken RK, **Fraass BA**: Profile measurements in lung-equivalent inhomogeneous media using various dosimetry systems. AAPM annual meeting, Milwaukee, July, 1997.
145. Roberson PL, Narayana V, McLaughlin PW, Lam KL, **Fraass BA**, McShan DL: Use of dose compensating filters in lieu of segmented intensity modulation. AAPM annual meeting, Milwaukee, July, 1997.
146. Balter JM, McShan DL, Kim J, **Fraass BA**: Automated on-line verification of dynamic multileaf collimator configuration using a megavoltage imager and a computer controlled radiotherapy system. AAPM annual meeting, Milwaukee, July, 1997.
147. Moran JM, Bruinvis IAD, **Fraass BA**: Prediction of output factors for mlc-shaped electron fields. AAPM annual meeting, Milwaukee, July, 1997. Med Phys
148. **Fraass BA**: "Clinical Use of Intensity Modulated Radiotherapy Using Multi-Segment Treatment Delivery Techniques", Refresher Course, American Association of Physicists in Medicine, Milwaukee, WI July 1997. Med Phys
149. **Fraass BA**: Quality assurance for computer-controlled conformal therapy, World Congress on Medical Physics and Biomedical Engineering, Nice, France, September 1997. Med and Biol Engin and Computing 35 (suppl part 2): 990, 1997.
150. **Fraass BA**: Clinical use of multi-segment intensity modulation, European Conference on Cancer and Oncology, Hamburg Germany, September 1997. Europ. J. Cancer 33 (Suppl 8): S138, 1997.
151. **Fraass BA**: 3-D Conformal Radiation Therapy - Part II: Computer-Controlled Treatment Delivery, American Society for Therapeutic Radiology and Oncology, Orlando, Florida, October 1997. Int J Rad Oncol Biol Phys
152. **Fraass BA**, Lash KL, Matrone GM, Volkman SK, McShan DL, Kessler ML, Lichter AS: The impact of treatment complexity and computer-control delivery technology on treatment delivery

- errors. American Society for Therapeutic Radiology and Oncology, Orlando, Florida, October 1997.
153. Ten Haken RK, **Fraass BA**, Lichter AS, Marsh LH, Radany EH, Sandler HM. A brain tumor dose escalation protocol based on biological equivalence to prior experience. American Society for Therapeutic Radiology and Oncology, October 19-22, 1997, Orlando. *Int J Radiat Oncol Biol Phys* 39(Suppl 1):180, 1997.
 154. **Fraass BA**, Marsh LM, Watson BA, Dusseau WJ, Martel MK, McShan DL, Sandler HM, Eisbruch A, Lichter AS: Routine clinical use of multi-segment IMRT: Analysis of planning strategies. American Association of Physicists in Medicine, San Antonio, Texas, August 9-13, 1998.
 155. **Fraass BA**: TG 53: Quality assurance for clinical radiation therapy treatment planning. American Association of Physicists in Medicine, San Antonio, Texas, August 9-13, 1998.
 156. Schewe JE, McShan DL, **Fraass BA**: Component-based superposition calculation: Dependence on number of components. American Association of Physicists in Medicine, San Antonio, Texas, August 9-13, 1998.
 157. Moran JM, McShan DL, Bruinvis IAD, **Fraass BA**: Improved 3-D pencil beam model for MLC-shaped high energy electron beams. American Association of Physicists in Medicine, San Antonio, Texas, August 9-13, 1998.
 158. Brugmans MJP, van der Horst A, Lebesque JV, Mijnheer BJ, McShan DL, Kessler ML, **Fraass BA**: Planning and dosimetric verification of a computer-optimized segmented irradiation technique for the prostate. American Association of Physicists in Medicine, San Antonio, Texas, August 9-13, 1998.
 159. McShan DL, **Fraass BA**, Kessler MK: Intensity modulation using beamlets. American Association of Physicists in Medicine, San Antonio, Texas, August 9-13, 1998.
 160. Kessler ML, Kim JJH, McShan DL, **Fraass BA**: A general framework for interactive and automated treatment plan optimization, part I: evaluators, modifiers, and costlets. American Association of Physicists in Medicine, San Antonio, Texas, August 9-13, 1998.
 161. **Fraass BA**: Quality assurance of computer-controlled systems for conformal therapy. European Society for Therapeutic Radiology and Oncology, Edinburgh, United Kingdom, September 20-24, 1998.
 162. Vineberg K, Balter JM, **Fraass BA**: Comparison of clinical stereotactic radiosurgery dosimetry using miniature and conventional multileaf collimators. American Society for Therapeutic Radiology and Oncology, Phoenix Arizona, October 1998.
 163. El-Mohri Y, Antonuk LE, Jee K-W, Brock K, Balter J, Lam K, McShan DL, **Fraass BA**: Initial performance evaluation of a clinical prototype active matrix flat-panel imager for radiotherapy imaging. American Association of Physicists in Medicine, San Antonio, Texas, August 1998.
 164. Antonuk LE, El-Mohri Y, Jee K-W, Maolinbay M, Nassif S, Rong X, Zhao Q, Balter JM, McShan DL, **Fraass BA**: Evaluation and first imaging results from a clinical prototype EPID based on active matrix, flat-panel imager (AMFPI) technology. 5th International Workshop on Electronic Portal Imaging (EPI98), Phoenix Az, October 1998.
 165. **Fraass BA**, Optimization for Conformal Radiotherapy using Segmental IMRT. European Society of Therapeutic Radiology and Oncology, Gottingen, Germany, April 1999. *Radiotherapy and Oncology*, 51: S36, 1999.
 166. Chan JL, Marsh LH, **Fraass BA**, Sandler HM: Failure patterns in high grade gliomas following 3-D conformal dose escalation radiotherapy to 90 Gy. American Society of Clinical Oncology, May 1999.
 167. **Fraass BA**, Vineberg KA, Kessler ML, McShan DL: Conformal Plan Optimization: Inverse and Forward Planning for Full and Segmental IMRT, American Association of Physicists in Medicine, Nashville, TN, July 1999. *Med Phys* 26: 1091, 1999.
 168. Vineberg KA, Martel MK, Kessler ML, McShan DL, Kim JJ, Sandler HS, **Fraass BA**: Dose Escalation of Brain Tumors to 100+ Gy using Automated IMRT Optimization. American Society of Therapeutic Radiology and Oncology, San Antonio, Tx, October 1999. *Int J Rad Oncol Biol Phys* 45 (3S): 270, 1999.
 169. Kessler ML, Kim JH, McShan DL, **Fraass BA**: A flexible and robust scoring methodology for automated optimization of conformal radiotherapy treatment plans. American Society of Therapeutic Radiology and Oncology, San Antonio, Tx, October 1999. *Int J Rad Oncol Biol Phys* 45 (3S):187, 1999.

170. Moran JM, **Fraass BA**: Design considerations for generation of electron beams for IMRT. World Congress on BioEngineering and Medical Physics, Chicago IL, July 2000. Med Phys , 2000.
171. Vineberg K, **Fraass BA**, Kessler ML, McShan DL, Eisbruch A: Parotid sparing without sacrificing target dose uniformity using optimized beamlet IMRT. American Society of Therapeutic Radiology and Oncology, Boston MA, October 2000. Int J Rad Onc Biol Phys xxxx, 2000.
172. Butler JB, **Fraass BA**, Martel MK, Normolle DP, Marsh RB, Lichter AS, Pierce LJ: Comparison of seven commonly used comprehensive radiotherapy treatment techniques for the chestwall and regional nodes using dose volume histogram analyses and normal tissue complication probabilities for pneumonitis and ischemic heart disease. American Society of Therapeutic Radiology and Oncology, Boston MA, October 2000. Int J Rad Onc Biol Phys xx:,xxx, 2000.
173. Chetty IJ, Liu L, Moran JM, Nurushev TS, Yokoyama SK, McShan DL, **Fraass BA**, Wilderman SJ, Bielajew AF: "Benchmarking of the DPM Monte Carlo Code for Radiotherapy Electron Beam Dose Calculations", Med Phys 28(6): 1249, 2001 [Abstract].
174. Nurushev TS, Chetty IC, Moran JM, Yokoyama SK, Antonuk LE, El-Mohri Y, **Fraass BA**: Dosimetry For DMLC Treatment Delivery With An A-Si AMFPI-Based Dosimetry System. American Association of Physicists in Medicine, Salt Lake City UT, July 2001. Med Phys 28(6):1267, 2001[Abstract].
175. Moran JM, Litzenberg DL, Nurushev TS, McShan DL, **Fraass BA**: An Integrated System For DMLC (IMRT) Fluence Verification. American Association of Physicists in Medicine, Salt Lake City UT, July 2001. Med Phys xxx, 2001 [Abstract].
176. Litzenberg D, **Fraass B.A**, McShan D.L, Chetty I.J, O'Donnell T, Roberts D, Becchetti F, Bielajew A.F, Moran J.M: Dose Characteristics of Clinical Electron and Photon Radiotherapy Beams Confined by Longitudinal Magnetic Fields, Med Phys 28(6):1277, 2001
177. Samuelsson A, Mcshah DL, Ten Haken RK, Eisbruch A, Johansson K-H, **Fraass BA**: Set-Up uncertainties in optimized IMRT plans for the head and neck: plan degradation and correction. Radiotherapy and Oncology 61 (Suppl 1): S47, 2001.
178. Tsien C, McShan DL, Marsh R, Lawrence TS, **Fraass BA**: Automated Optimization of IMRT for Malignant Gliomas: Improved Ability to Apply Clinical Decisions within the Planning Process. ESTRO 2001. Radiotherapy and Oncology 61 (Suppl 1): S31, 2001.
179. Moran JM, Litzenberg DL, **Fraass BA**: Dosimetric comparisons of conformal and IMRT techniques. European Society For Therapeutic Radiology And Oncology, Seville Spain, September 2001. Radiotherapy and Oncology 61 (Suppl 1): S17, 2001.
180. **Fraass BA**, Moran JM, Litzenberg DL, McShan DL: A holistic approach to quality assurance for IMRT, ESTRO IMRT Workshop, European Society For Therapeutic Radiology And Oncology, Seville Spain, September 2001. Radiotherapy and Oncology 61 (Suppl 1): S2, 2001.
181. **Fraass BA**: Optimization and IMRT: performing valid comparisons between techniques. ESTRO, European Society For Therapeutic Radiology And Oncology, Seville Spain, September 2001. Radiotherapy and Oncology 61 (Suppl 1): S51, 2001.
182. Chetty I.J, Liu L, Moran JM, Nurushev TS, Yokoyama SK, McShan DL, **Fraass BA**, Wilderman SJ, Bielajew AF, DeMarco JJ, Solberg TD: Analysis of the DPM Monte Carlo for Radiotherapy Dose Calculations, Radiotherapy and Oncology 61(Suppl 1): S29, 2001.
183. McShan DL, Ten Haken RK, Kessler ML, Balter J, Lam KL, **Fraass BA**: Radiotherapy plan optimization accounting for set-up and motion uncertainty using a multiple instance geometry approximation. Radiotherapy and Oncology, 61 (Suppl 1) S13, 2001.
184. Krueger EA, **Fraass BA**, McShan DL, Marsh R, Pierce LJ: The potential gains for chestwall and regional nodal irradiation using intensity modulated radiation therapy (IMRT). American Society For Therapeutic Radiology And Oncology, San Francisco, CA, November 2001. Int J Radiat Oncol Biol Phys 51 (Suppl 1): 123, 2001.
185. Vineberg KA, McShan DL, Kessler ML, **Fraass BA**: Comparison of dose, dose-volume, and biologically-based cost functions for IMRT plan optimization. American Society For Therapeutic Radiology And Oncology, San Francisco, CA, November 2001. Int J Rad Oncol Biol Phys 51 (Suppl 1): 71, 2001.
186. Kelly R, **Fraass BA**, Lam KL, Ten Haken RK, Sandler HM, Balter J: Conformal MLC-based stereotactic radiosurgery using a conventional multileaf collimator. American Society For Therapeutic Radiology And Oncology, San Francisco, CA, November 2001. Int J Rad Oncol Biol Phys 51(S1): 380, 2001.

187. **Fraass BA**: Comparisons of breast treatment techniques, American Society Of Therapeutic Radiology And Oncology, San Francisco, CA, November 2001. Int J Rad Oncol Biol Phys 51 (Suppl 1): 33A, 2001.
188. **Fraass BA**: Is that IMRT plan really better: quantitative plan evaluation techniques. American Society Of Therapeutic Radiology And Oncology, San Francisco, San Francisco, CA, November 2001. Int J Rad Oncol Biol Phys xxxxx 2001. Int J Rad Oncol Biol Phys 51 (Suppl 1): 53A, 2001.
189. Tsien C, Eisbruch A, McShan DL, Marsh R, **Fraass BA**: Intensity modulated radiotherapy (IMRT) for locally advanced paranasal sinus cancer: application of clinical decisions in the planning process. American Society Of Therapeutic Radiology And Oncology, San Francisco, CA, November 2001. Int J Rad Oncol Biol Phys 51 (Suppl 1): 123-124, 2001.
190. EA Krueger, LJ Pierce, DL McShan, JD Radawski, **BA Fraass**: Reduction of dose to the coronary arteries using IMRT for locoregional post-mastectomy irradiation. Breast Can Res Treat 69: 229, 2001.
191. Charland PM, Chetty IJ, **Fraass BA**: Dependence of Convolution/Superposition Algorithm Dose Calculations for Photons on Energy Spectrum. American Association of Physicists in Medicine Annual Meeting, Montreal, Canada (2002). Med Phys 29: 1288, 2002.
192. Chetty IJ, Charland PM, Tyagi N, McShan DL, **Fraass BA**, Bielajew AF: Experimental validation of the DPM Monte Carlo code for photon beam dose calculations in inhomogeneous media. American Association of Physicists in Medicine Annual Meeting, Montreal, Canada (2002). Med Phys 29:1351, 2002.
193. Chetty IJ, Tyagi N, Bose A, McShan DL, Bielajew AF, **Fraass BA**: Implementation of the Dose Planning Method (DPM) Monte Carlo code on a parallel processing network, accepted for a Works-In-Progress presentation at American Association of Physicists in Medicine Annual Meeting, Montreal, Canada (2002). Med Phys xxx, 2002.
194. **Fraass BA**, Moran JM: Dosimetric verification needs for conformal therapy and IMRT. American Association of Physicists in Medicine Annual Meeting, Montreal, Canada (2002). Med Phys 29: 1358, 2002.
195. Litzenberg DW, Moran JM and **Fraass BA**: Incorporation of realistic delivery limitations into dynamic MLC treatment delivery. American Association of Physicists in Medicine Annual Meeting, Montreal, Canada (2002). Med Phys 29: 1267, 2002.
196. McShan DL, Lynn K, Vineberg KA, **Fraass, BA**: Radiotherapy plan optimization accounting for set-up and motion uncertainty using a multiple instance geometry approximation. American Association of Physicists in Medicine Annual Meeting, Montreal, Canada (2002). Med Phys 29: 1256, 2002.
197. Moran JM, Nurushev TS, Litzenberg DL, Antonuk LE, El-Mohri Y, **Fraass BA**: Commissioning of an a:Si active matrix flat panel dosimeter for IMRT Quality Assurance. American Association of Physicists in Medicine Annual Meeting, Montreal, Canada (2002). Med Phys 29: 1366, 2002.
198. Nurushev TS, Moran JM, Antonuk LE, El-Mohri Y, **Fraass BA**: Characterization and Use of an Active Matrix Flat Panel Dosimeter (AMFPD) System for Commissioning and QA for New Treatment Machines. American Association of Physicists in Medicine Annual Meeting, Montreal, Canada (2002). Med Phys 29: 1371-1372, 2002.
199. Tyagi N, Chetty IJ, **Fraass BA**, Bielajew AF: Calculations of a Millennium Multileaf Collimator using the DPM and BEAM/DOSXYZ Monte Carlo codes, American Association of Physicists in Medicine Annual Meeting, Montreal, Canada (2002). Med Phys 29: 1230, 2002.
200. Yokoyama S, Roberson PL, Moran JM, Litzenberg DW, **Fraass BA**: Buildup Region Dependence on Photon Dose Delivery Technique for IMRT. American Association of Physicists in Medicine Annual Meeting, Montreal, Canada (2002). Med Phys 29: 1315, 2002.
201. **Fraass BA**, McShan DL, Vineberg KA, Balter J, Ten Haken RK, Eisbruch A: Generation of robust IMRT plans for head/neck cancer: replacing the PTV with direct accommodation of setup uncertainty and buildup region dosimetry. European Society for Therapeutic Radiology and Oncology, Prague, Czech Republic, September 2002. Radiology and Oncology xxx: xxx, 2002.
202. Vineberg KA, McShan DL, Kessler ML, Balter J, Eisbruch A, **Fraass BA**: IMRT Plans Robust to Setup Error and Motion: Explicit Incorporation of Clinical Setup Data using the Multiple Instance of Geometry Approximation (MIGA). ASTRO Annual Meeting, xxxxx, October 2002. Int J Rad Oncol Biol Phys xx:: 265, 2002.
203. Chetty IJ, Tyagi N, Rosu M, Charland PM, McShan DL, Ten Haken RK, **Fraass BA** and Bielajew AF: Clinical Implementation, Validation and Use of the DPM Monte Carlo Code for

- Radiotherapy Treatment Planning, Proceedings of the Nuclear Mathematical and Computational Sciences Meeting: Gatlinburg, TN, April 2003. (Abstract and Oral Presentation).
204. Rosu M, Chetty IJ, Tyagi N, McShan D, Ten Haken RK and **Fraass BA**: Experimental validation of a virtual source model for MLC-shaped dose calculations using the Dose Planning Method (DPM) Monte Carlo code", *Med Phys* 30:1515, 2003. AAPM 2003, San Diego, CA
 205. JM Moran, J Radawski, **BA Fraass**: Use of Dose Gradient Maps for IMRT QA Analysis. American Association of Physicists in Medicine, Annual Meeting, San Diego, CA, August 2003. *Med Phys* 30: 1396, 2003.
 206. IJ Chetty, M Rosu, N Tyagi, DL McShan, JM Balter, **BA Fraass**, RK Ten Haken: A fluence convolution method to account for respiratory motion and random setup variation in 3D dose calculations of the liver. American Association of Physicists in Medicine, Annual Meeting, San Diego, CA, August 2003. *Med Phys* 30: 1776-1780, 2003
 207. N Tyagi, IJ Chetty, DL McShan, AJ Bielajew, **BA Fraass**: Monte Carlo phase space calculations and experimental verification of step-and-shoot IMRT delivery. American Association of Physicists in Medicine, Annual Meeting, San Diego, CA, August 2003. *Med Phys* 30: 1421, 2003.
 208. **BA Fraass**, J Balter, R Ten Haken, D McShan: Margins, Errors, and Plan Optimization, European Society for Therapeutic Radiology and Oncology, Geneva, Switzerland, September 2003. *Radiotherapy and Oncology* xx: xxx, 2003.
 209. **BA Fraass**, J Balter, IJ Chetty, RK Ten Haken, DL McShan: Optimization Incorporating Geometric Uncertainties: Workshop on Intensity Modulated Radiation Therapy, European Society for Therapeutic Radiology and Oncology, Geneva, Switzerland, September 2003. *Radiotherapy and Oncology* xx: xxx, 2003
 210. E Krueger, M Coselmon, L Pierce, R Marsh, **BA Fraass**: Accelerated whole breast radiotherapy with a concomitant boost using a cone IMRT technique. ASTRO Annual Meeting, Salt Lake City, October, 2003. *Int J Rad Oncol Biol Phys* 57 (S37): 2033, 2003
 211. Chetty IJ, Rogers DWO, Siebers J, and **Fraass BA**: Will Monte Carlo Dose Calculations Change Treatment Planning and Prescriptions in the Clinic?", invited presentation, American Association of Therapeutic Radiology and Oncology (ASTRO) Annual Meeting, Salt Lake City, UT, 2003. *Int J Rad Onc Biol Phys* 57: S37: xxx, 2003.
 212. IJ Chetty, M Rosu, DL McShan, **BA Fraass**, RK Ten Haken: The influence of beam fit differences in the comparison of dose calculation algorithms for treatment planning in the lung: presented Current topics in Monte Carlo treatment planning: Advanced Workshop, McGill University, Montreal CN, May 2004.
 213. Moran, J., Ben-David, M., Litzenberg, D., and **Fraass, B**. Impact of IMRT delivery technique for partial breast irradiation. 2004 AAPM Annual Meeting, Pittsburg PA, July 2004
 214. K Jee, D McShan, **B Fraass** Intuitive Multicriteria IMRT Optimization Using a Lexicographic Approach. 2004 AAPM Annual Meeting, Pittsburg PA, July 2004
 215. Coselmon, M., Moran, J., Radawski, J., and **Fraass, B**. Improving IMRT delivery efficiency using intensity limits during inverse planning. 2004 AAPM Annual Meeting, Pittsburg PA, July 2004
 216. R Kulasekere, J Moran, **B Fraass**, J Hayward, P Roberson: Improved Film Dosimetry of IMRT Fields in the Surface Buildup Region. 2004 AAPM Meeting, Pittsburg PA, July 2004.
 217. **BA Fraass**, JM Moran, K Vineberg, R Marsh, DL McShan: Automated optimization of 3DCRT and multisegment IMRT plans. European Society of Therapeutic Radiology and Oncology, Amsterdam, the Netherlands, October 2004.
 218. RK Ten Haken, O Chapet, E Thomas, D Tatro, DL McShan, **BA Fraass**, ML Kessler: IMRT optimization using EUD and NTCP for tumors arising within large volume effect organs that also exhibit PTV overlap with an adjacent critical structure. European Society of Therapeutic Radiology and Oncology, Amsterdam, the Netherlands, October 2004
 219. M Rosu, M Coselmon, E Acosta, **B Fraass**, D McShan, I Chetty: Implementation and Initial Testing of a Monte Carlo Based Algorithm for IMRT Inverse Treatment Planning. American Association of Physicists in Medicine Annual Meeting, Seattle, WA, July 2005. *Med Phys* 32: 1967, 2005.
 220. M Coselmon, E Larsen, D McShan, **B Fraass**, Optimization of Basis Function Sets to Represent IMRT Intensity Patterns in Inverse Planning. American Association of Physicists in Medicine Annual Meeting, Seattle, WA, July 2005. *Med Phys* 32: 1977, 2005.

221. K Jee, D McShan, **B Fraass**: Progressive Articulation of Radiotherapy Planning Goals Based On Soft-Constraints. American Association of Physicists in Medicine Annual Meeting, Seattle, WA, July 2005. Med Phys 32: 1977, 2005.
222. N Tyagi, J Moran, D Litzenberg, **B Fraass**, and I Chetty: Monte Carlo Investigation of Dosimetric Differences Between SMLC and DMLC IMRT Delivery Techniques in Heterogeneous Media. American Association of Physicists in Medicine Annual Meeting, Seattle, WA, July 2005. Med. Phys. 32: 2090, 2005.
223. **BA Fraass**, DL McShan: Are dose gradients for IMRT larger? 3-D analysis of the generalized dose gradient for IMRT and 3DCRT plans. European Society of Therapeutic Radiology and Oncology Annual Meeting, Lisbon Portugal, September 2005. Radiotherapy and Oncology 76, 2005.
224. IJ Chetty, M Rosu, DL McShan, **BA Fraass**, RK Ten Haken: Inverse plan optimization incorporating random setup uncertainties using fluence convolution. American Society of Therapeutic Radiology and Oncology Annual Meeting, Denver CO, October 2005. Int J Rad Oncol Biol Phys 63: S63, 2005.
225. E Acosta, D McShan, F Kong, **B Fraass**, and I Chetty: Comparison of Correction and Model Based Dose Algorithms in Lung Cancer Retrospective Dose Recalculation and Treatment Outcome Evaluation. American Association of Physicists in Medicine Annual Meeting, Orlando FL, August 2006. Med. Phys. 33: 2295, 2006.
226. N Tyagi, D Litzenberg, J Moran, **B Fraass**, and I Chetty: Use of the Monte Carlo Method as a Comprehensive Tool for SMLC and DMLC-Based IMRT Delivery and Quality Assurance (QA). American Association of Physicists in Medicine Annual Meeting, Orlando FL, August 2006. Med. Phys. 33: 2148, 2006.
227. Y Chen, J Moran, D Roberts, Y El-Mohri, L Antonuk, and **B Fraass** IMRT Dosimetry with An Active Matrix Flat Panel Dosimeter. American Association of Physicists in Medicine Annual Meeting, Orlando FL, August 2006. Med. Phys. 33: 2297, 2006.
228. E Acosta, D McShan, F Kong, **B Fraass**, and I Chetty: Comparison of Correction and Model Based Dose Algorithms in Lung Cancer Retrospective Dose Recalculation and Treatment Outcome Evaluation. American Association of Physicists in Medicine Annual Meeting, Orlando FL, August 2006. Med. Phys. 33: 2295, 2006.
229. M Matuszak, E Larsen, and **B Fraass**: Adaptive Diffusion Smoothing: A Novel Method to Control IMRT Field Complexity Based On the Diffusion Equation. American Association of Physicists in Medicine Annual Meeting, Orlando FL, August 2006. Med. Phys. 33: 2201, 2006.
230. K Jee, D McShan, K Vineberg, and **B Fraass**: Performance Evaluations of a Preemptive Approach in IMRT Planning. American Association of Physicists in Medicine Annual Meeting, Orlando FL, August 2006. Med. Phys. 33: 2128, 2006.
231. **B Fraass**, D McShan: Optimization of Conformal and IMRT Plans with Direct Segment Optimization. Proceedings of the XVth International Conference on Computers in Radiotherapy, Toronto CA, June 2007.
232. **BA Fraass**: The Use of Computers in Radiotherapy, Present: Re-Defining and Re-Arranging the Building Blocks of the Radiotherapy Process. Proceedings of the XVth International Conference on Computers in Radiotherapy, Toronto CA, June 2007.
233. N Tyagi, B Curran, E Acosta, W Keranen, A Bielajew, **B Fraass**: Integration of Monte Carlo-based Treatment Planning into the Clinic: Issues and Considerations. Proceedings of the XVth International Conference on Computers in Radiotherapy, Toronto CA, June 2007.
235. M Matuszak, R Ten Haken, E Larsen, **B Fraass**: Uniform radiobiological targeting with adaptive diffusion smoothing during IMRT optimization. Proceedings of the XVth International Conference on Computers in Radiotherapy, Toronto CA, June 2007.
235. D McShan, M Kessler, **B Fraass**: Knowledge Guided Radiation Therapy (KGRT) - Decision Support and Process Framework. Proceedings of the XVth International Conference on Computers in Radiotherapy, Toronto CA, June 2007.
236. W. Keranen, M. Kessler, D. McShan, X. Chen, C. White, G. Fisher, **B. Fraass**: Beyond Plans: Enabling Adaptive Therapy with Prescription-based Adaptation. Proceedings of the XVth International Conference on Computers in Radiotherapy, Toronto CA, June 2007.
237. Y Chen, J Moran, D Roberts, Y El-Mohri, L Antonuk, **B Fraass**: Charge Trapping in a Prototype Active Matrix Flat Panel Dosimeter and Its Implications. American Association of Physicists in Medicine Annual Meeting, Minneapolis MN, August 2007. Med. Phys. 34, 2586 (2007)

238. N Tyagi, C Tien, B Curran, and **B Fraass**: Using Electron Beam Modifiers in the DPM Monte Carlo Code for Electron Beam Treatment Planning. American Association of Physicists in Medicine Annual Meeting, Minneapolis MN, August 2007. Med. Phys. 34, 2502 (2007)
239. E Acosta, D McShan, **B Fraass**: Improvement of the Convolution/Superposition Algorithm for IMRT Dose Calculations. American Association of Physicists in Medicine Annual Meeting, Minneapolis MN, August 2007. Med. Phys. 34, 2459 (2007).
240. K Jee, K Lam, D McShan, **B Fraass**. Delivery Outcome-Driven Adaptive Re-Planning Strategy. American Association of Physicists in Medicine Annual Meeting, Minneapolis MN, August 2007. Med. Phys. 34, 2431 (2007).
241. M Matuszak, J Moran, N Tyagi, E Larsen, **B Fraass**: Experimental Evaluation and Verification of the Deliverability Aspects of IMRT Beams Optimized with Adaptive Diffusion Smoothing. American Association of Physicists in Medicine Annual Meeting, Minneapolis MN, August 2007. Med. Phys. 34, 2335 (2007).
242. MM Matuszak, RB Marsh, EW Larsen, **BA Fraass**, LJ Pierce, JM Moran: Evaluation of an Adaptive Diffusion Smoothing Technique to Improve Delivery Efficiency in Accelerated Partial Breast IMRT. Int J Rad Onc Biol Phys 69: S659-S660, 2007.
243. N Tyagi, BH Curran, PL Roberson, JM Moran, E Acosta, **BA Fraass**: Experimental Verification of Monte Carlo-based simulation model in a heterogeneous media for IMRT treatment planning, In proceedings of the Third McGill International Workshop: Monte Carlo Techniques in radiotherapy delivery and verification", 2007 (Oral Presentation, Montreal, CA)
244. M Kessler, W Keranen, X Chen, D McShan, **B Fraass**: Automation of Workflow and Data Processing in the Radiotherapy Enterprise. Varian Research Symposium 2008
245. W Keranen, M Kessler, D McShan, X Chen, C White, G Fisher, **B Fraass**: Beyond Plans: Enabling Adaptive Therapy with Prescription-based Adaptation. Varian Research Symposium 2008.
246. **B Fraass**: Designing and Implementing Clinical Studies Involving New Technology. American Association of Physicists in Medicine Annual Meeting, Houston TX. Med. Phys. 35, 2887 (2008).
247. KW Jee, R Kashani, A Eisbruch, J Balter, M Kessler, D McShan, R Ten Haken, **B Fraass**: Delivery outcome-driven adaptive replanning strategy for patient deformation. European Society of Therapeutic Radiology and Oncology Annual Meeting, Goteborg, Sweden. Radiotherapy Oncol xx, xxx, 2008.
248. D Litzenberg, K Jee, R Ten Haken, D McShan, **B Fraass**: Dosimetric outcomes of adaptive replanning versus daily target-volume correction in prostate. European Society of Therapeutic Radiology and Oncology Annual Meeting, Goteborg, Sweden. Radiotherapy Oncol xx, xxx, 2008.
249. **B Fraass**, R Ten Haken, J Balter, A Eisbruch, T Lawrence, M Kessler, D Normolle, Y Cao, D McShan: Individualization and Optimization of High Dose Conformal Therapy. National Cancer Institute Translational Science Meeting, Washington DC, November 2008.
250. R Kashani, JM Balter, KJ Jee, **BA Fraass**: Error propagation in tracking geometry and dose through the course of treatment for dose accumulation in adaptive therapy of Head-and-neck cancers. AAPM Annual Meeting 2009, Anaheim, CA, July 2009. Med Phys 36: 2483, 2009.
251. K-W Jee, R. Kashani., McShan DL, **Fraass BA**: MPC-Based Adaptive Radiotherapy Optimization AAPM Annual Meeting 2009, Anaheim, CA, July 2009. Med Phys. 36, 2702, 2009.
252. D McShan, M Kessler, W Keranen, **B Fraass**: Computerized Implementation of Radiation Treatment Planning Directives. AAPM Annual Meeting 2009, Anaheim, CA, July 2009. Med. Phys. 36 2633, 2009.
253. T.M. Williams, J. Moran, S. Hsu, I. Gallagher, S. Henshaw, R. Marsh, D. **Fraass**, B. Yanke, L. Pierce: A Phantom Evaluation of Contralateral Breast Dose for Whole Breast Irradiation Techniques. Int J Radiat Onc Biol Phys 75: Suppl, S205, 2009.
254. Joel Wilkie, Mary Feng, Martha Matuszak, Jean Moran, **Benedick Fraass**: Evaluation of tradeoffs between delivery efficiency and clinical plan quality arising from optimizer and MLC sequencer compromises. AAPM Annual Meeting 2010, Philadelphia PA, July 2010. Med Phys 37: 3224, 2010.
255. C Fox, MM Matuszak, JM Moran, **BA Fraass**: Investigations into treatment planning for mycosis fungoides localized to the face. AAPM Annual Meeting 2010, Philadelphia PA, July 2010. Med Phys 37: 3315, 2010.

256. MM Matuszak, KW Jee, DL McShan, **BA Fraass**: Making Controlled Tradeoffs Between Competing IMRT Goals using Lexicographic Ordering. AAPM Annual Meeting 2010, Philadelphia PA, July 2010. Med Phys 37: 3094, 2010.
257. J Balter, KA Vineberg, M Feng, AE Eisbruch, Y Cao, **BA Fraass**: Robustness and Treatment Plan Optimization for Oropharyngeal Cancer - Implications for Adaptive Therapy. ASTRO Annual Meeting, San Diego, CA, November 2010. Int J Radiat Oncol Biol Phys 78: S183-184, 2010.
258. MM Matuszak, RK Ten Haken, DL McShan, DS Tatro, S Yuan, F Kong, **BA Fraass**: An Adaptive Feedback-driven Optimization Strategy to Minimize Radiation Induced Lung Toxicity (RILT) in High Dose Lung Radiotherapy. ASTRO Annual Meeting, San Diego, CA, November 2010. Int J Radiat Oncol Biol Phys 78: S116-117, 2010.
259. TM Williams, JM Moran, S Hsu, I Gallagher, S Henshaw, R Marsh, **BA Fraass**, B Yanke, LJ Pierce: A Phantom Evaluation of Contralateral Breast Dose for Whole Breast Irradiation Techniques. ASTRO Annual Meeting, San Diego, CA, November 2010. Int J Radiat Oncol Biol Phys 78: S205, 2010.
260. E Ford, **B Fraass**, S Mutic, P Dunscombe, S Sutlief, O Holmberg: Improving Patient Safety in Radiation Therapy. AAPM Annual Meeting 2011, Vancouver, BC, Canada, August 2011. Med Phys 38: 3794, 2011.
261. **BA Fraass**, J Steers, MM Matuszak, DL McShan: Direct Segment Optimization of Conformal Plans: Achieving Equivalence with Beamlet IMRT. AAPM Annual Meeting 2011, Vancouver, BC, Canada, August 2011. Med Phys 38: 3685, 2011.
262. TC Long, **BA Fraass**, MM Matuszak, E Romeijn: Sensitivity Analysis for Lexicographic Ordering in Radiation Therapy Treatment Planning. AAPM Annual Meeting 2011, Vancouver, BC, Canada, August 2011. Med Phys 38: 3701, 2011.
263. MM Matuszak, DL Mcshan, **BA Fraass**: VMAT and IMRT: The Best of Both Worlds. AAPM Annual Meeting 2011, Vancouver, BC, Canada, August 2011. Med Phys 38: 3740, 2011.
264. DL McShan, ML Kessler, **BA Fraass**: An Ontology-Based Framework for Radiation Oncology Patient Management. AAPM Annual Meeting 2011, Vancouver, BC, Canada, August 2011. Med Phys 38: 3491, 2011
265. MB Little, T Ritter, J Steers, **BA Fraass**: Initial evaluation of an inverse-planned direct segment optimization technique for prostate radiotherapy. ASTRO Annual Meeting, Miami Beach FL, October 2011. Int J Rad Onc Biol Phys 81: S901, 2011.
266. W Yang, H Sandler, **B Fraass**: Improve Dose Conformity with IMRT Using Shorter Source to Tumor Distance. AAPM Annual Meeting 2012, Charlotte, NC. July 2012. Med Phys 39: 3836, 2012.
267. W Yang, R Wallace, K Huang, R Cook, **B Fraass**: Sensitivity of ArcCheck to Delivery Errors in IMRT/VMAT Treatment. AAPM Annual Meeting 2012, Charlotte, NC. July 2012. Med Phys 39: 3787, 2012.
268. K Younge, M Matuszak, J Moran, D McShan, **B Fraass**, D Roberts: Improving VMAT Delivery Accuracy by Using An Aperture Complexity Penalty During Optimization. AAPM Annual Meeting 2012, Charlotte, NC. July 2012. Med Phys 39: 3980, 2012.
269. L Xing, **B Fraass**, E Ford, S Chang: D Roberts: Establishing multidisciplinary collaboration as a medical physicist. AAPM Annual Meeting 2012, Charlotte, NC. July 2012. Med Phys 39: 3907, 2012.
270. W. Yang, H. Sandler, **F. Benedick**, N. Nissen, S. K. Lo, K. Gupta, L. Jamil, R. Tuli,: Is Cone Beam CT Alone Sufficient for Localization of Pancreas/Liver tumor during Free-Breathing SBRT? ASTRO Annual Meeting, Boston MA, November 2012. Int J Rad Onc Biol Phys xx: xxx, 2012.
271. W. Yang, **B. A. Fraass**, H. Sandler, N. Nissen, S. Lo, K. Gupta, L. Jamil, R. Tuli: Margin Definition and Deformable Motion Assessment Using Multiple Fiducial Markers for Pancreas/Liver SBRT. ASTRO Annual Meeting, Boston MA, November 2012. Int J Rad Onc Biol Phys xx: xxx, 2012.
272. D Pak, M Feng, E Ben-Joseph, R Ten Haken, **B Fraass**, M Matuszak: Weighted sum cost function versus lexicographic ordering for IMRT treatment planning. ASTRO Annual Meeting, Boston MA, November 2012. Int J Rad Onc Biol Phys 84: S795-S796, 2012.
273. P Gabriel, W Bosch, J Carlin, H Chou, B Curran, D Eggert, **B Fraass**, J Goldwein, K Hotz, M Kessler, C Mayo, S Mutic, G Sharpe, W Tome, W Tulsiek, T McNutt: The National Radiation Oncology Registry's approach to data sharing. Int. Conf. on Computers in Radiotherapy, Melbourne Australia, May 2013.

274. R Reznik, W Yang, H Sandler, **B Fraass**, R Tuli: Feasibility of SIB-based SBRT dose-escalation in pancreatic adenocarcinoma patients. American Radium Society, May 2013.
275. **BA Fraass**, CM Rose, T McNutt, P Gabriel, C Lawton, A Zietman, J Efstathiou, J Bekelman, S Mutic: Progress and challenges in creation of a National Radiation Oncology Registry. Joint Workshop on Technology for Innovation in Radiation Oncology. National Cancer Institute, Bethesda MD, June 2013.
276. W Yang, Y Yong, A Mirhadi, C Burnison, B Hakimian, R Tuli, H Sandler, **B Fraass**: An off-line QA tool for evaluating reproducibility of deep inhalation breath-hold treatment for breast radiotherapy. AAPM, Indianapolis, IN, August 2013.
277. Y Yong, R Tuli, A Antonuk, W Yang, H Sandler, **B Fraass**: Evaluation of local therapy response for locally advanced pancreatic cancer (LAPC) using PET/CT. AAPM, Indianapolis, IN, August 2013.
278. W Yang, R Tuli, Y Yong, H Sandler, **B Fraass** Dosimetric Effects of Rotational Uncertainties in Fiducial-based Treatment Setup for Pancreas SBRT. ASTRO, Atlanta GA, September 2013. Int J Rad Oncol Biol 87 [S1]: S672, 2013
279. D Hoopes, P Johnstone, Chapin, Schubert, Kabban, Lee, Chen, **B Fraass**, Skinner, L Marks: Early Results from the ASTRO Practice Patterns in Peer Review Survey Project. ASTRO, Atlanta GA, September 2013. Int J Rad Oncol Biol 87 [S1]: S119, 2013.
280. JE Bekelman, T Wall, D Nassif, M Mojarrad, **B Fraass**, C Lawton, C Rose, A Zietman, J Efstathiou: The National Radiation Oncology Registry: Approaches to Regulatory Compliance to Promote Wide Participation. ASTRO, Atlanta GA, September 2013. Int J Rad Oncol Biol 87 [S1]: S493, 2013.
281. Z Fan, J Pang, W Yang, Y Yue, R Tuli, X Bi, **BA Fraass**, D Li: Respiratory phase-resolved 3D MRI with isotropic high spatial resolution: Determination of the average breathing motion pattern for abdominal radiotherapy planning. Int Society of Magnetic Resonance in Medicine, 2014.
282. Y Yue, **BA Fraass**, W Yang, H Sandler, A Hendifar, N Nissen, R Tuli: Pre-treatment [18F] FDG-PET Texture Analysis Predicts Local Response of Pancreatic Cancer to Radiotherapy. American Society of Clinical Oncology Gastrointestinal Cancers Symposium, San Francisco CA, January 2014.
283. R Tuli, W Yang, M Tighiouart, Y Yue, **BA Fraass**, HM Sandler, AE Hendifar, NN Nissen; 18F-FDG PET as a predictor of resectability and clinical outcomes in locally advanced pancreatic cancer patients treated with radiotherapy. American Society of Clinical Oncology Gastrointestinal Cancers Symposium, San Francisco CA, January 2014.
284. J Steers, **BA Fraass**: Selecting Meaningful Gamma Criteria Based On Error Detection Sensitivity. AAPM, Austin Tx, July 2014. Med Phys 41: 456, 2014.
285. W Yang, R Tuli, H Sandler, **B Fraass**: Sensitivity Evaluation of Organ Based Registration for Pancreatic IGRT. AAPM, Austin Tx, July 2014 Med Phys 41: 186, 2014.
286. L Rothenberg, R Mohan, J Van Dyk, **B Fraass**, T Bortfeld: Evolution of Radiation Treatment Planning. AAPM, Austin Tx, July 2014. Med. Phys. 41: 515, 2014.
287. Z Deng, J Pang, W Yang, Y Yue, R Tuli, **B Fraass**, D Li, Z Fan: Respiratory Phase-Resolved 3D MRI with Isotropic High Spatial Resolution: Determination of the Average Breathing Motion Pattern for Abdominal Radiotherapy Planning. AAPM, Austin Tx, July 2014. Med Phys 41: 473, 2014.
288. E McKenzie, W Yang, M Burnison, A Mirhadi, B Hakimian, S Shiao, R Reznik, Y Yue, H Sandler, **B Fraass**: Motion Stability and Dosimetric Impact of Spirometer-Based DIBH-RT of Left-Sided Breast Cancer. AAPM, Austin Tx, July 2014. Med Phys 41: 474, 2014.
289. Y Yue, Z Fan, W Yang, J Pang, E McKenzie, Z Deng, R Tuli, H Sandler, D Li, **B Fraass**: Geometric Validation of K-Space Self-Gated 4D-MRI Vs. 4D-CT Using A Respiratory Motion Phantom. AAPM, Austin Tx, July 2014. Med Phys 41: 572, 2014.
290. Y Yue, W Yang, **BA Fraass**, HM Sandler, R Tuli: Prognostic Modeling of Locally Advanced Pancreatic Cancer Treated with Radiotherapy Using [18F] FDG-PET Features and CA-19-9. ASTRO annual meeting, San Francisco CA, September 2014.
291. W Yang, A Mirhadi, R Tuli, B Hakimian, Y Yue, H Sandler, **BA Fraass**: Overlap Volume Analysis using 4DCT: Implications for Gating in SBRT of the Lung and Pancreas. ASTRO annual meeting, San Francisco CA, September 2014.
292. Y Yue, K Astvatsaturyan, X Cui, X Zhang, **B Fraass**, S Bose: Integration of EGFR and CK5/6 Immunoexpression to Predict Survival of Triple-Negative Breast Cancer (TNBC). United States & Canadian Academy of Pathology Annual Meeting, Boston MA, March 2015.

293. Jin J, McKenzie E, Gou S, Yang G, Fan Z, Li D, Tuli R, Sandler H, **Fraass B**, Yang W. TH-CD-204-08: Non-Local Means Denoising of SG-KS-4D-MRI Improves the Accuracy of Deformable Registration and Pancreas Tumor Segmentation. AAPM Annual Meeting, Anaheim CA, July 2015. Med Phys. 2015 Jun;42(6):3733. doi: 10.1118/1.4926255. PubMed PMID: 26129553.
294. Yang W, Fan Z, Tuli R, Deng Z, Pang J, Wachsmann A, Reznik R, Sandler H, Li D, **Fraass B**. TH-CD-204-01: FEATURED PRESENTATION and BEST IN PHYSICS (JOINT IMAGING-THERAPY): Novel SG-KS-4D-MRI Sequence Reduces 4D Rebinning Artifacts and Improves GTV Contouring Consistency for Pancreatic Cancer Patients. AAPM Annual Meeting, Anaheim CA, July 2015. Med Phys. 2015 Jun;42(6):3731. doi: 10.1118/1.4926248. PubMed PMID: 26129547.
295. **Fraass B**. WE-G-BRB-02: The Role of Program Project Grants in Study of 3D Conformal Therapy, Dose Escalation and Motion Management. AAPM Annual Meeting, Anaheim CA, July 2015. Med Phys. 2015 Jun;42(6):3690. doi: 10.1118/1.4926068. PubMed PMID: 26129366.
296. Steers J, **Fraass B**. WE-D-BRA-02: Dosimetric Impact On Patient Plans From Errors Tha Can Pass IMRT QA. AAPM Annual Meeting, Anaheim CA, July 2015. Med Phys. 2015 Jun;42(6):3667. doi: 10.1118/1.4925929. PubMed PMID: 26129231.
297. Yue Y, Fan Z, Deng Z, Pang J, DeMarco J, Tuli R, Li D, **Fraass B**. SU-F-303-09: Identifying Abdominal Inter-Organ Motion Correlations Using 4D-MRI and 4D-Image Registration. AAPM Annual Meeting, Anaheim CA, July 2015. Med Phys. 2015 Jun;42(6):3539. doi: 10.1118/1.4925236. PubMed PMID: 26128537.
298. Y Yue, X Cui, S Bose, W Audeh, X Zhang, **B Fraass**: Stratifying Triple-Negative Breast Cancer Prognosis using 18F-FDG-PET/CT Imaging. San Antonio Breast Meeting, 2015.
299. Y Yue, SL Shiao, M Burnison, X Cui, A Chung, W Audeh, X Zhang, HM Sandler, **BA Fraass**: Stratifying prognosis of triple-negative breast cancer patients treated with breast conserving therapy and mastectomy using basal biomarkers. ASTRO San Antonio Tx 2015.
300. W Yang, Z Fan, Z Deng, J Pang, A Wachsmann, D Li, HM Sandler, **BA Fraass**, R Tuli: Four-dimensional Magnetic Resonance Imaging with 3D Radial Sampling and Self-gating based K-space Sorting: Early Clinical Experience on Pancreatic Cancer Patients. ASTRO San Antonio Tx 2015. PubMed PMID: 26103193
301. Y Yue, K Astvatsaturyan, X Cui, X Zhang, **B Fraass**, S Bose: The Forkhead Box Transcription Factor FOXC1 Further Stratifies Patient Risk in Triple-Negative Breast Cancer. US & Canadian Academy of Pathology annual meeting, Seattle WA, March 2016.
302. BA Fraass: Recent Safety Efforts vs. Software-driven Radiation Oncology Planning and Treatment: Who's Winning? 18th International Conference on the use of Computers in Radiotherapy, London UK, June 2016.
303. W Yang, Z Fan, Z Deng, J Pang, X Bi, M Fenchel, D Li, B Fraass, B Hakimian, R Reznik, M Bryant, H Sandler, R Tuli: Evaluation of Internal Target Volume Derived From a Prototype 4D-MRI Sequence with 3D Radial Stack-Of-Stars Trajectory and K-Space Self-Gating. AAPM Annual Meeting, Washington DC, July 2016.
304. J DeMarco, J Moran, M Barnes, P Greer, G Kim, B Fraass, W Yang, E McKenzie: Performance of the AS1200 EPID for Periodic Photon Quality Assurance. AAPM Annual Meeting, Washington DC, July 2016.
305. J Steers, B Fraass: Quality Assurance for IMRT/VMAT QA Devices: Issues Affecting the Timing for ArcCHECK Recalibration. AAPM Annual Meeting, Washington DC, July 2016.
306. E McKenzie Boehnke, J DeMarco, J Steers, B Fraass: Assessing the Sensitivity and False Positive Rate of the Integrated Quality Monitor (IQM) Large Area Ion Chamber to MLC Positioning Errors. AAPM Annual Meeting, Washington DC, July 2016.
307. Y Yue, S Wagner, L Medina-Kauwe, X Cui, G Zhang, S Shiao, H Sandler, B Fraass: Theranostic Platinum Nanoparticle for Radiation Sensitization in Breast Cancer Radiotherapy. AAPM Annual Meeting, Washington DC, July 2016.
308. Z Deng, W Yang, J Pang, R Tuli, X Bi, B Hakimian, B Fraass, D Li, Z Fan: 4D-MRI with 3D Radial Sampling and Self-Gating-Based K-Space Sorting: Image Quality Improvement by Slab-Selective Excitation. AAPM Annual Meeting, Washington DC, July 2016.
309. F Rath, B Fraass, E Samei: Concepts in Risk-Based Assessment. AAPM Annual Meeting, Washington DC, July 2016.
310. B Fraass, P Xia, Q Wu, J Donaghue: In Memorium of Jan van de Geijn: Knowledge-based planning. AAPM Annual Meeting, Washington DC, July 2016.
311. B Curran, L Fairbent, J Palta, J Dobbins, B Fraass, D Pavord: New Member Symposium Panel Discussion. AAPM Annual Meeting, Washington DC, July 2016.

312. Z Deng, W Yang, J Pang, R Tuli, B Hakimian, R Reznik, X Bi, B Fraass, D Li, Z Fan: 4D-MRIU with 3D radial sampling and self-gating-based K-space sorting: image quality improvement by slab-selective excitation. ISMRM Annual Meeting, Honolulu Hawaii, April 2017.

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