

Martin James Murphy
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Professional Summary

Research and teaching interests:

- Image-guided radiation therapy
- Medical image analysis and registration
- Motion-adaptive radiation therapy
- Image processing and fusion
- Real-time control systems for medical applications

Education

Postgraduate

1982 - 1985, postdoctoral fellow, Department of Physics, University of Washington (Seattle WA).

1979 - 1982, postdoctoral fellow, Nuclear Science Division, Lawrence Berkeley Laboratory, University of California (Berkeley CA).

Graduate

1974 - 1979, University of Chicago (Chicago IL), physics, PhD 1980.
Thesis title: Nuclear structure systematics and the stellar equation of state.
Advisor: Dr David N Schramm.

Undergraduate

1969 - 1973, Brown University (Providence RI), physics, ScB 1973.
Honors: Sigma Xi scientific honor society.

Academic appointment history

2012 -	Visiting Professor	University of Coventry, UK
2011 -	Professor	Virginia Commonwealth University
2008 - 2011	Associate Professor (with tenure)	Virginia Commonwealth University
2003 - 2008	Associate Professor	Virginia Commonwealth University

Employment history

- 1995 – 2003 Senior Research Scientist Department of Radiation Oncology,
Stanford University School of Medicine,
Stanford CA
- 1992 -1994 Director of System Development Accuray Incorporated,
Sunnyvale CA
- 1985-1992 Research Scientist Space Sciences Laboratory,
Lockheed Palo Alto Research Laboratory,
Palo Alto CA
- 1990 – 1992 Principal investigator for the Lockheed Independent Research Program to
develop a compact rotational modulation collimator x-ray and gamma-ray
imager.
- 1989 - 1992 Instrument Scientist for the Polar Ionospheric X-ray Imaging Experiment
on the NASA ISTP/POLAR satellite mission (launched February 1996).
- 1985 – 1989 Co-investigator for the Air Force STARSCAN satellite mission.
- 1983 – 1985 Principal investigator for experiments H059 and H079 ("Projectile
Breakup at 20 MeV/n") at the Holifield Heavy Ion Research Facility, Oak
Ridge National Laboratory.
- 1981 – 1982 Principal investigator for experiment 561H ("Beta-decay Half-lives of Ar⁴⁰
Projectile Fragments") at the Lawrence Berkeley Laboratory Bevalac.

Awards and Honors

Fellow, American Association of Physicists in Medicine, 2009.
Sigma Xi Scientific Honor Society, Brown University, 1973.

Society memberships

- 1996 – present American Association of Physicists in Medicine
1974 – present American Physical Society

Scientific and scholarly activities

Expert services: Editorial

2012 – present Editorial Board, Journal of Computational Medicine
2006 – present International Advisory Board, Journal of Physics in Medicine and
Biology
2014 – present Board of Associate Editors, Journal of Medical Physics
1998 – 2013 Guest Associate Editor for Medical Physics.
1997 – present Journal referee for:
Radiotherapy and Oncology
Medical Physics
International Journal of Radiation Oncology/Biology/Physics
IEEE Transactions in Medical Imaging
Journal of Physics in Medicine and Biology
Computer Methods and Programs in Biomedicine
Radiation Oncology

Abstract reviewer: ASTRO 2011 annual meeting

Abstract reviewer: AAPM 2010 annual meeting

Abstract reviewer: AAPM 2006 annual meeting

Paper reviewer; International Conference on Machine Learning Applications, Bethesda, 2010

Paper reviewer; International Conference on Machine Learning Applications, Miami 2009

Paper reviewer; International Conference on Machine Learning Applications, San Diego 2008

Expert services: Scholarly

Visiting professor, University of Coventry, 2012 – present.

Visiting professor, University of Chicago, January 2007.

Invited Faculty, Biomedical Imaging Research Opportunities Workshop, NIH Feb 2006.

Invited Faculty AAPM Summer School 2006.

Invited Faculty, Image-guided Radiotherapy Workshop, Lake Tahoe CA, Sept 2003.

Invited faculty, RSNA refresher course, Chicago IL, 1999.

Invited faculty, AAPM Summer School, Madison WI, 1998.

Expert services: Extramural grant reviews

National Institute of Biomedical Imaging and Bio-engineering Biomedical Technology Resource Center (P41) grant review panel, Boston MA, November 4 – 6, 2014.

National Institute of Biomedical Imaging and Bio-engineering R01 grant review panel, 6/14/12.

National Institute of Biomedical Imaging and Bio-engineering R01 grant review panel, 6/1/10.

NIH special emphasis panel ZRG1 CVRS-F(52)R, 12/2/09.

Canada Foundation for Innovation Expert Review Committee, Image-guided Surgery, Toronto, January 2009.

National Institute of Biomedical Imaging and Bio-engineering Special Emphasis Panel, Image-guided Interventions RFA, 3/14 – 3/15/07

Expert services: Meeting organization

Program committee, Tenth International Conference on Machine Learning Applications, Honolulu Hawaii, December 2011.

Program committee, Ninth International Conference on Machine Learning Applications, Bethesda Maryland, December 2010.

Co-organizer, Workshop in real-time motion adaptation for radiotherapy, Lubeck Germany, September 2009.

Special Session co-organizer, *Applications of Machine Learning in Radiotherapy*, Seventh International Conference on Machine Learning Applications, San Diego, December 2008.

Program director, Georgetown University workshop on motion-adaptive radiotherapy May 2007

Grants and contracts: present

Medtronic Incorporated, *Artifact-free cone-beam CT reconstruction for pedicle screw and DBS probe localization*, May 2013 – October 2014, \$118,464 total costs, role: principal investigator, 20% effort.

Grants and contracts: past

NIH P01CA116602-P1, *Image-guided adaptive radiation therapy*, (Jeffrey Williamson PI), April 2007 – March 2012, \$1,186,285 direct costs, \$292,489 indirect costs, \$1,478,774 total costs, role: project leader, 30% effort. This grant is part of an NIH program project grant.

NIH P01CA116602-P3, *Image-guided adaptive radiation therapy*, (Jeffrey Williamson PI), April 2007 – March 2012, \$1,389,779 direct costs, \$638,007 indirect costs, \$2,027,786 total costs, role: co-investigator, 6% effort. This grant is part of an NIH program project grant.

NIH 1 R01CA123299, *Deformable image registration and reconstruction for radiotherapy applications*, (Martin J Murphy PI), September 2006 – August 2011,

\$787,500 direct costs, \$368,125 indirect costs, \$1,144,625 total costs, role: principal investigator, 25% effort.

NIH R21CA119143-01, *Electromagnetic tracking of tumors for radiotherapy*, (Martin J Murphy PI), Feb 2006 – Feb 2008, \$125,000 direct costs, \$44,590 indirect costs, \$169,590 total costs, role: principal investigator, 15% effort.

NIH R41 CA77994-01 *Radiosurgical Treatment in the Thorax and Abdomen*, (Martin J Murphy PI), April 1998 - March 1999, \$100,000 direct costs, role: principal investigator, 42% effort.

Stanford Bio-X Interdisciplinary Research Initiative, *Image-guided radiosurgery for the spine and lung*, (Martin J Murphy and Daniel H Kim, co-PIs), Oct 2000 - Sept 2002, \$198,500 direct costs, role: co-principal investigator, 50% effort.

Lockheed Independent Research Program, *Development of a Compact Rotational Modulation X-ray Imaging System*, (Martin J Murphy PI), 1991 – 1992, \$200,000 direct costs, role: principal investigator, 50% level of effort.

Patents and Copyrights

Provisional patent application: *Method and apparatus for evaluating radiation therapy treatment plans*, December 2012.

Invention Disclosure: *Method for statistical sampling of anatomical motion and deformation for probabilistic treatment planning*, VCU Office of Technology Transfer, December 2008.

Invention Disclosure: *Apparatus and method for reconstructing time-dependent computed tomography images of moving anatomy*, VCU Office of Technology Transfer, May 2008.

Invention Disclosure: *System and method for guiding and verifying brachytherapy seed implantation*, VCU Office of Technology Transfer, 13 June 2005.

US patent 5901199 for *High-speed Inter-modality Image Registration via Iterative Feature Matching*, Issued May 4, 1999.

Extramural presentations

International

December 2012, invited lecture, *Research in Image-guided radiation therapy at Virginia Commonwealth University*, Leicester, UK.

December 2012, invited lectures (2), *Applications of neural networks to real-time motion management in radiation therapy*, Coventry, UK.

September 2009, invited lecture, *Techniques of breathing prediction for real-time motion adaptation*, Real-time motion adaptive radiation therapy workshop, Lubeck, Germany.

June 2008, poster presentation, *Reconstruction of deformed 4D CT for moving anatomy*, International Conference on Computer-Assisted Radiology and Surgery, Barcelona, Spain.

June 2007, proferred lecture, *Sensitivity of parametric deformable image registration to image noise*, International Symposium on Computer-Assisted Radiology and Surgery, Berlin, Germany.

September 2005, invited lecture, *Dosimetric effects of patient movement during spinal radiosurgery*, 7th Congress of the International Stereotactic Radiosurgery Society, Brussels, Belgium.

June 2005, proferred lecture, *Forward CT reconstruction from limited projection data*, The 19th International Conference on Computer-Assisted Radiology and Surgery, Berlin, Germany.

October 2002, invited lecture, *Image-guided radiosurgery*, Symposium on Future Radiation Therapy, Canadian Association of Radiation Oncologists 2002 annual meeting, Toronto, Canada.

September 2002, invited lecture, *Image-guided radiosurgery with the CyberKnife*, Symposium on New Technologies for Treatment Delivery, ESTRO 21 Annual Meeting, Prague, Czech Republic.

June 2002, proferred lecture, *Adaptive filtering to predict lung tumor breathing motion during image-guided radiation therapy*, The 16th International Congress on Computer-assisted Radiology and Surgery, Paris, France.

September 1997, poster presentation, *Performance of an Image-guided Robotic System for Radiosurgery*, World Congress on Medical Physics and Biomedical Engineering, Nice, France.

September 1997, invited lecture, *Automatic Beam Targeting in an Image-guided Radiosurgery System*, Department of Medical Physics, Deutsch Krebsforschungszentrum, Heidelberg, Germany.

National

August 2013, invited lecture, *Issues in the fusion of MR, PET, and CT images*, AAPM Annual Meeting, SAM therapy educational session on multimodality co-registration for tumor volume delineation, Indianapolis IN.

July 2010, invited lecture, *Some uses of neural networks in radiation therapy*, AAPM Annual Meeting Symposium on Applications of Machine Learning to Radiotherapy, Philadelphia PA.

May 2009, invited lecture, *The management of imaging dose during radiation therapy*, American College of Medical Physics Annual Meeting, Virginia Beach VA.

December 2008, invited lecture, *Using neural networks to predict breathing motion during radiation therapy*, Seventh International Congress on Machine Learning Applications, San Diego CA.

November 2008, poster presentation, *The effect of transponder motion on the accuracy of the Calypso electromagnetic localization system*, ASTRO Annual Meeting, Boston MA.

August 2008, invited lecture, *The management of imaging dose during radiation therapy*, American Board of Radiology Maintenance of Certification Summit, Chicago IL.

July 2008, invited lecture, *Control theory for motion adaptation in radiotherapy*, Symposium on the uses of control theory in radiation therapy, AAPM Annual Meeting, Houston TX.

July 2007, proffered lecture, *Estimates of Breathing Predictability*, AAPM Annual Meeting, Minneapolis MN.

May 2007, invited lecture, *Estimates of breathing predictability*, Georgetown University workshop on motion-adaptive radiotherapy, Washington DC.

April 2007, invited lecture, *Image-guided motion adaptation in Radiotherapy*, International Symposium on Biomedical Imaging, Washington DC.

January 2007, invited lecture, *Motion-adaptive radiotherapy*, University of Chicago, Chicago IL.

July 2006, poster presentation, *Effects of cone-beam CT noise and cupping artifacts on deformable image registration*, AAPM Annual Meeting, Orlando FL.

June 2006, invited lecture, *Imaging dose during image-guided radiotherapy*, AAPM Summer School, Windsor, Ontario, Canada.

June 2006, invited lecture, *Use of fluoroscopy in image-guided radiation therapy*, AAPM Summer School, Windsor, Ontario, Canada.

February 2006, invited lecture, *Integrating real-time imaging and delivery techniques*, BIROW IV workshop, National Institutes of Health, Bethesda MD.

February 2005, invited lecture, *Experience with the CyberKnife*, Workshop on Image-guided Therapy, Massachusetts General Hospital and Harvard Medical School, Boston MA.

July 2004, proffered lecture, *Iterative reconstruction of brachytherapy seed configurations from x-ray projection images*, AAPM annual meeting, Pittsburgh PA.

September 2003, invited lecture, *Tracking patient movement during image-guided radiosurgery*, UC Davis Continuing Education Workshop in Image-guided Radiotherapy, Lake Tahoe CA.

February 2003, invited lecture, *Experience in Image-guided Therapy at Stanford*, Workshop on Image-guided Therapy, Massachusetts General Hospital, Boston MA.

October 2002, proffered lecture, *Patterns of patient movement during image-guided frameless radiosurgery*, ASTRO annual meeting, New Orleans LA.

November 2001, proffered lecture, *Real-time compensation of breathing motion during radiotherapy*, ASTRO annual meeting, San Francisco CA.

June 2001, proffered lecture, *Frameless Image-guided radiosurgery for lung and pancreas tumors*, 5th International Stereotactic Radiosurgery Society Congress, Las Vegas NV.

March 2001, invited lecture, *New Developments in Image-guided Radiosurgery Using Robotic Systems*, Massachusetts General Hospital/Harvard Medical School, Boston MA.

February 2001, invited lecture, *Image-guided radiosurgery using robotic systems*, Frontier Science Research Conference, San Diego CA.

July 2000, proffered lecture, *Feasibility of real-time tracking of a moving treatment site during image-guided radiosurgery*, World Congress on Medical Physics and Biomedical Engineering, Chicago IL.

June 2000, proffered lecture, *Image Guidance for extra-cranial robotic radiosurgery*, The 14th International Congress for Computer Assisted Radiology and Surgery, San Francisco CA.

November 1999, invited lecture, *Real-time Imaging for Radiographic Patient Positioning*, Refresher course 428B, RSNA Annual Meeting, Chicago IL.

September 1998, poster presentation, *Radiographic Patient Positioning Using an Amorphous Silicon Portal Imaging Sensor*, EPID98 Workshop on Electronic Portal Imaging, Phoenix AZ.

July 1998, poster presentation, *The importance of CT slice thickness in radiographic patient positioning accuracy*, AAPM Annual Meeting, San Antonio TX.

July 1998, poster presentation, *The advantages of amorphous silicon x-ray cameras for radiographic patient positioning*, AAPM Annual Meeting, San Antonio TX.

June 1998, invited lecture, *Automatic image-guided patient positioning and tracking*, 1998 AAPM Summer School on Imaging in Radiotherapy, Madison, WI.

July 1996, proferred lecture, *Frameless Radiosurgery Using Real-time Image Correlation for Beam Targeting*, AAPM Annual Meeting, Philadelphia PA.

November 1995, poster presentation, *Positioning Accuracy of the Neurotron 1000*, ASTRO 37th Annual Meeting, Miami FL.

June 1985, invited lecture, *Sequential projectile breakup at 20 MeV/n*, Nuclear Science Division, Lawrence Berkeley Laboratory, Berkeley CA.

May 1984, invited lecture, *Characteristics of Projectile Breakup and Fragmentation*, Nuclear Physics Colloquium, Department of Physics, Brookhaven National Laboratory, Brookhaven NY.

May 1984, invited lecture, *Characteristics of Projectile Breakup and Fragmentation*, Nuclear Physics Colloquium, Department of Physics, Massachusetts Institute of Technology, Cambridge MA.

September 1981, invited lecture, *Transfer and Breakup observed with the 88" cyclotron streamer chamber*, Physics Division Colloquium, Argonne National Laboratory, Argonne IL.

Regional

October 2011, invited lecture, *Image guidance and Motion Adaptation in Radiation Therapy*, Annual meeting of the Southeastern Section of the American Physical Society, Roanoke VA.

February 2010, invited lecture, *Managing the imaging dose during radiation therapy*, AAPM New England Chapter annual meeting, Boston MA

Teaching, advising, mentoring

Courses taught

2014, Resident introduction to radiological physics, VCU School of Medicine, Department of Radiation Oncology, Program in Medical Physics, contributing instructor, two contact hours.

2006 - 2014, VCU PHYS 689, *Current literature review*, VCU School of Medicine, Department of Radiation Oncology, Program in Medical Physics, course master, one contact hour per week.

Conducted a current literature review for medical physics and radiation oncology in seminar format.

2007 – present, EGRB 101, *Bio-engineering practicum 1*, VCU School of Engineering, Department of Biomedical Engineering, contributing instructor, one contact hour per week.

Introduce VCU undergraduate bio-engineering students to radiation oncology physics and engineering via tutorials and clinical rounds.

2004 - 2008, VCU PHYS 567, *Introduction to the physics of radiation therapy*, VCU School of Medicine, Department of Radiation Oncology, Program in Medical Physics, contributing instructor, three contact hours.

Contributed introductory lectures of medical image processing.

2000 – 2002, EE 373A, *Adaptive Signal Processing*, Stanford University, Department of Electrical Engineering, contributing instructor, five contact hours per week.

Mentored two to five graduate electrical engineering students per year in independent research projects related to the development of adaptive control systems for motion-adaptive radiation therapy.

Mentored trainees: postdoctoral fellows

2008 – 2012	Constantin Vaman, VCU (currently Medical Physics Residency fellow, University of Pennsylvania)
2006 – 2011	R Scott Brock, VCU (currently US Patent Office)
2008 – 2011	Jian Wu, VCU (currently Medical Physics Residency fellow, University of Florida)
2006 – 2007	Zhouping Wei, VCU (currently with Philips Medical Systems)
2004 – 2006	Lanchun Lu, VCU (currently clinical assistant professor, Ohio State University)
2000 – 2002	Cihat Ozhasoglu, Stanford University (currently Assistant Professor, University of Pittsburgh School of Medicine)

Mentored trainees: graduate students

2009 – 2013	David Staub, PhD graduate student, VCU, Department of Radiation Oncology, Program in Medical Physics
2008 – 2014	Travis Jacobson, PhD graduate student, VCU, Department of Radiation Oncology, Program in Medical Physics
2007 – 2011	Damodar Pokhrel, PhD graduate student, VCU, Department of Radiation Oncology, Program in Medical Physics
2006 – 2007	Thomas Becker, MS in physics, VCU, Department of Physics

Graduate dissertation committees

2010 – present	Douglas Vile, VCU PhD candidate in medical physics.
2010 – present	Shufei Chen, VCU PhD candidate in medical physics.
2010 – 2012	Suk Jin Lee, VCU PhD in electrical engineering.
2010 – present	Nahla Sayah, VCU PhD candidate in medical physics.
2008 - 2013	Joe Gardner, VCU PhD in medical physics.
2008 – 2012	Josh Evans, VCU PhD in medical physics.
2007 – 2010	Damodar Pokhrel, VCU PhD in medical physics.
2006 – 2012	Joseph Moore, VCU PhD in medical physics.
2007 – 2009	Pavani Davuluri, VCU Masters in electrical engineering.

Extramural teaching

AAPM Summer School Faculty 2006 (two courses)
RSNA refresher course faculty 1999
AAPM Summer School Faculty 1998

Service activities

Service to the profession

Session chair, AAPM annual meeting, Indianapolis IN, August 2013.
AAPM Therapy Imaging Subcommittee, 2010 – present.
Session chair, ASTRO annual meeting, Chicago IL, November 2009.
Session chair, AAPM annual meeting, Anaheim CA, July 2009.
AAPM representative at the American Board of Radiology Maintenance of Certification Summit, August 8, 2008, Chicago IL.
Session chair, AAPM 2006 Annual meeting, August 2006
Member, AAPM Task Group 104 - image-guided radiotherapy technology, 2006 – 2010.
Chair, AAPM Task Group 75 - imaging dose during radiotherapy, 2003 – 2007.
Member, AAPM Task Group 76 - respiratory motion during radiotherapy, 2003 – 2006.
Session chair, ASTRO Annual Meeting, San Francisco, October 2001

Service to the University

2008 – 2011 VCU Faculty Senate.

Service to the School of Medicine

2006 VCU Biophysics/radiation oncology joint statistics faculty search committee.

Service to the Department

2008 – 2009 VCU Dept of Radiation Oncology promotions and tenure committee.

2006 – present VCU Graduate medical physics program admissions committee.

2006 VCU Radiation oncology medical physics faculty search committee.

Publications

Peer-reviewed journal articles

89) C Zhang, GE Christensen, MJ Murphy, E Weiss, JF Williamson, *Surface assimilation and its application in nonrigid image registration* (submitted to Transactions in Medical Image Analysis 2014).

88) Staub D and **Murphy MJ**, *Time dependent cone-beam CT reconstruction using a motion model optimized via forward iterative projection matching: initial patient data testing and verification*, in review at Medical Physics 2013.

87) Jacobson TJ and **Murphy MJ**, *An automatic control point placement algorithm for non-uniform B-spline deformable image registration*, submitted to Medical Physics 2012.

86) Balik S, Weiss E, Jan N, Roman N, Sleeman WC, Fatyga M, Christensen GE, Zhang C, **Murphy MJ**, Lu J, Keall P, and Williamson JF, Hugo GD, *Evaluation of 4D CT to 4D Cone-Beam CT Deformable Image Registration for Lung Cancer Adaptive Radiation Therapy*, Int J Rad Onc Biol Phys 86 (2), 372 – 379, 2013.

85) Staub D and **Murphy MJ**, *A digitally-reconstructed radiograph algorithm calculated from first principles*, Medical Physics 40 (1), 11902-1 – 11902-15, 2013.

84) Zhang C, Christensen GE, Kurtsek S, Srivastava A, **Murphy MJ**, Weiss E, Bai E, Williamson JF, *SUPIR: Surface uncertainty-penalized, non-rigid image registration for pelvic CT imaging*, Biomedical Image Registration, Lecture Notes in Computer Science 7359/2012, 236-245, 2012.

83) **Murphy MJ**, Salguero FJ, Siebers JV, Staub D, Vaman C, *A method to estimate the effect of deformable image registration uncertainties on daily dose mapping*, Medical Physics 39 (2), 573 – 580, 2012.

- 82) S J Lee, Y Motai, and **M Murphy**, *Respiratory motion estimation with hybrid implementation of extended Kalman filter*, IEEE Transactions on Industrial Electronics 59 (11), 4421 - 4432, 2012.
- 81) Staub D, Docef A, C Vaman, **Murphy MJ**, *4DCBCT reconstruction using a PCA motion model*, Medical Physics 38(12), 6697 - 6709, 2011.
- 80) Jacobson T and **Murphy MJ**, *Optimized knot placement for B-splines in Deformable Image Registration*, Medical Physics 38(8): 4579 - 4582, 2011.
- 79) Pokhrel D, **Murphy MJ**, Todor DA, Weiss E, Williamson JF, *Localizing intracavitary brachytherapy applicators from cone-beam CT x-ray projections via a novel iterative forward projection matching method*, Medical Physics 38 (2), 1070 – 1080, 2011.
- 78) Pokhrel D, **Murphy MJ**, Todor DA, Weiss E, Williamson JF, *Reconstruction of brachytherapy seed positions and orientations from cone-beam CT x-ray projections via a novel iterative forward projection matching method*, Medical Physics 38 (1): 474 – 486, 2011.
- 77) Dogan N, Wu J, Song S, and **Murphy MJ**, *Comparisons of multiple anatomy-based rigid registration methods for patient setup before external beam radiation therapy in the head and neck*, Journal of Applied Clinical Medical Physics 12 (1), 76 – 85, 2011.
- 76) Wu J and **Murphy MJ**, *A neural network based 3D/3D image registration quality evaluator for patient setup in the absence of a ground truth*, Med Phys 37 (11): 5756 – 5764, 2010.
- 75) Brock RS, Docef A, **Murphy MJ**, *Reconstruction of a cone-beam CT image via forward iterative projection matching*, Med Phys 37 (12): 6212 – 6220, 2010.
- 74) Pokhrel D, **Murphy MJ**, Todor D, Weiss E, Williamson JF, *Clinical application and validation of an iterative forward projection matching algorithm for permanent brachytherapy seed localization from conebeam-CT x-ray projections*, Med Phys 37 (9), 5092-5101, 2010.
- 73) Vaman C, Staub D, Williamson J, **Murphy MJ**, *A method to map errors in the deformable registration of 4DCT images*, Med Phys 37 (11): 5765 – 5776, 2010.
- 72) Su Z, Zhang L, **Murphy MJ**, Williamson JF, *Analysis of prostate patient setup and tracking data: potential interventional strategies*, Int J Rad Onc Bio Phys, online 2010.
- 71) Wu J and **Murphy MJ**, *Assessing the intrinsic accuracy of 3D/3D rigid image registration results for patient setup in the absence of a ground truth*, Med Phys 37 (6): 2501 – 2508, 2010.

- 70) Weiss E, Wu J, Sleeman W, Bryant J, Mitra P, Myers M, Ivanova T, Mukhopadhyay N, Ramakrishnan R, **Murphy MJ**, Williamson JF, *Clinical evaluation of soft tissue organ boundary visualization on cone-beam computed tomographic (CBCT) imaging*, Int J Rad Oncology/Biology/Physics 78 (3): 929 – 936, 2010.
- 69) Yan C, H Zhong, **Murphy M**, Weiss E, Siebers JV, *A pseudo inverse deformation vector field generator and its applications*, Medical Physics 37 (3), 1117 - 1128, 2010.
- 68) Wu J, **Murphy MJ**, Weiss E, Sleeman WC, Williamson JF, *Development of a population-based model of surface segmentation uncertainties for uncertainty-weighted deformable image registrations*, Medical Physics 37 (2), 607 – 614, 2010.
- 67) **Murphy MJ** and Pokhrel D, *Optimization and evaluation of an adaptive neural network filter to predict respiratory motion*, Medical Physics 36 (1): 40 – 47, 2009.
- 66) **Murphy MJ**, *Intra-fraction geometric uncertainties in frameless image-guided radiosurgery*, Int J Rad Onc Biol Phys 73 (5): 1364 – 1368, 2009.
- 65) George R, Suh Y, **Murphy M**, Williamson J, Weiss E, Deall P, *On the accuracy of a moving average algorithm for target tracking during radiation therapy treatment delivery*, Med Phys 35 (6): 2356 – 2365, 2008.
- 64) Dieterich S, Cleary K, D’Souza W, **Murphy MJ**, Wong KH, Keall P, *Locating and targeting moving tumors with radiation beams*, Med Phys 35 (12), 5684 – 5694, 2008.
- 63) **Murphy MJ**, Eidens R, Vertatschitsch E, Wright N, *The effects of transponder movement on the accuracy of the Calypso electromagnetic localization system*, Int J Rad Onc Biol Phys 72 (1), 295 – 299, 2008.
- 62) Docef A and **Murphy MJ**, *Reconstruction of a deformed 4D CT for moving anatomy*, Int Journal of CARS 3: 591 – 598, 2008.
- 61) **Murphy MJ**, Wei Z, Fatyga M, Williamson J, Anscher M, Wallace T, and Weiss E, *How does CT image noise affect 3D deformable image registration for image-guided radiotherapy planning?*, Medical Physics 35(3): 1145 – 1153, 2008.
- 60) **Murphy MJ**, *Response to comments by Verellen, Soete, Erbe, and Labsik on the question of how to make rigid-body setup corrections in radiotherapy*, Medical Physics 34(10): 4066 – 4067, 2007.
- 59) **Murphy MJ**, Balter J, Balter S, BenComo J, Das I, Jiang S, Ma C, Olivera G, Rodebaugh R, Ruchala K, Shirato H, Yin F, *The management of imaging dose during image-guided radiotherapy*, Report of the AAPM Task Group 75, Medical Physics 34(10): 4041 – 4063, 2007.

58) **Murphy MJ**, Wei ZP, Fatyga M, *Sensitivity of parametric deformable image registration to image noise*, International Journal of Computer-Assisted Radiology and Surgery 2, S52 – S53, 2007.

57) **Murphy MJ**, *Image-guided patient positioning: If one cannot correct for rotational errors in external-beam radiotherapy setup, should the rotations be measured?* Medical Physics 34 (6): 1880 – 1883, 2007.

56) **Murphy MJ**, Lin P-S, and Ozhasoglu C, *Intra-fraction dose delivery timing during IMRT and radiosurgery can potentially influence the radiobiological effect*, Medical Physics 34(2): 481 – 484, 2007.

This paper was reviewed in the ESTRO newsletter for Summer 2007, p.10.

55) Keall PJ, Mageras GS, Balter JM, Emery RS, Forster KM, Jiang SB, Kapatoes JM, Low DA, **Murphy MJ**, Murray BR, Ramsey CR, Van Herk MB, Vedam SS, Wong JW, and Yorke E, *The management of respiratory motion in radiation oncology report of AAPM Task Group 76*, Med Phys 33: 3874 – 3900, 2006.

54) **Murphy MJ** and Dieterich S, *Comparative performance of linear and nonlinear neural networks to predict irregular breathing*, Phys Med Biol 51, 5903 – 5914, 2006.

53) Keall PJ, Cattell H, Pokhrel D, Dieterich S, Wong K, **Murphy MJ**, Vedam SS, Wijesooriya K, Mohan R, *Geometric accuracy of a system for real time target tracking with a dynamic MLC*, Int J Rad Onc Biol Phys 65 (5): 1579 – 1584, 2006.

52) Vedam S, Docef A, Fix M, **Murphy M**, Keall P, *Dosimetric impact of geometric errors due to respiratory motion prediction on dynamic multileaf collimator based 4D radiation delivery*, Medical Physics 32 (6): 1607 – 1620, 2005.

51) **Murphy MJ** and Todor DA, *Demonstration of a forward iterative method to reconstruct brachytherapy seed configurations from x-ray projection images*, Physics in Medicine and Biology 50: 2715 – 2737, 2005.

50) Isaksson M, Jalden J, and **Murphy MJ**, *On using an adaptive neural network to predict lung tumor motion during respiration for radiotherapy applications*, Med Phys 32 (12), 3801 – 3809, 2005.

49) **Murphy MJ**, Chang S, Gibbs I, Le Q-T, Hai J, Kim D, Martin D, Adler JR, *Patterns of patient movement during image-guided frameless radiosurgery*, International Journal of Radiation Oncology/Biology/Physics 55, 5 1400 - 1408, 2003.

48) Whyte RI, Crownover R, **Murphy MJ**, Martin DP, Rice TW, DeCamp MM, Rodebaugh R, Weinhaus MS, and Le Q-T, *Stereotactic radiosurgery for lung tumors: preliminary report of a phase I trial*, Annals of Thoracic Surgery 75: 1097 – 1101, 2003.

- 47) Rohlfing T, Russakoff DB, **Murphy MJ**, and Maurer CR, *An intensity-based registration algorithm for probabilistic images and its application for 2-D to 3-D image registration*, Medical Imaging 2002, Proc SPIE 4684, 581 - 591, Feb 2002.
- 46) **Murphy MJ**, Martin D, Whyte R, Ozhasoglu C, Hai J, Le Q-T, *The effectiveness of breathholding to stabilize lung and pancreas tumors during radiosurgery*, International Journal of Radiation Oncology/Biology/Physics , 53, 475 - 482, 2002.
- 45) Ozhasoglu C and **Murphy MJ**, *Issues in respiratory motion compensation during external-beam radiotherapy*, International Journal of Radiation Oncology/Biology/Physics 52, 1389-1399, 2002.
- 44) **Murphy MJ**, *Fiducial-based targeting accuracy for external-beam radiotherapy*, Medical Physics 29, 334 - 344, 2002.
- 43) **Murphy MJ**, Chang S, Gibbs I, Le Q-T, Martin D, and Kim D, *Image-guided radiosurgery in the treatment of spinal metastases*, Neurosurgical Focus 11 (6), 1 - 7, 2001.
- 42) Chang, S.D., **Murphy**, M.J., Lee, E., Adler, J.R.: *Stereotactic radiosurgery and hypo-fractionated radiotherapy for residual or recurrent cranial base and cervical chordomas*. Neurosurgical Focus 10(3), Article 5, 2001.
- 41) Ryu S, Kim D, **Murphy MJ**, Chang S, Le Q-T, Martin D, Adler J, *Image-guided frameless robotic stereotactic radiosurgery to spinal lesions*, Neurosurgery 49: 838 - 847, 2001.
- 40) **Murphy MJ**, Adler JR, Bodduluri M, Dooley J, Forster K, Hai J, Le Q-T, Luxton G, Martin D, Poen J, *Image-guided radiosurgery for the spine and pancreas*, Computer-Aided Surgery 5, 278 - 288, 2000.
- 39) Schweikard A, Glosser G, Bodduluri M, **Murphy MJ**, Adler JR, *Robotic motion compensation for respiratory movement during radiosurgery* Computer-Aided Surgery 5, 263 - 277, 2000.
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