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CURRICULUM VITAE

Hualiang Zhong PhD

Associate Professor
Department of Radiation Oncology

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EDUCATION:

05/2000 PhD in Applied Mathematics, University of Western Ontario, London, ON, Canada
05/2001 MS in Computer Science, University of Ontario, London, ON, Canada
01/2006 Postdoc in Medical Imaging, Robarts Research Institute, London, ON, Canada

FACULTY APPOINTMENTS:

02/2006 - 07/2006 Instructor in Medical Physics, Department of Radiation Oncology, Virginia Commonwealth University, Richmond, VA
08/2006 - 07/2008 Assistant Professor in Medical Physics, Department of Radiation Oncology, Virginia Commonwealth University, Richmond, VA
08/2008 - 07/2011 Sr. Associate Physicist, Department of Radiation Oncology, Henry Ford Health System, Detroit, MI
08/2011 - 06/2018 Sr. Staff Physicist, Department of Radiation Oncology, Henry Ford Health System, Detroit, MI
07/2018 - Present Associate Professor, Department of Radiation Oncology, Medical College of Wisconsin, Milwaukee, WI

EDUCATIONAL ADMINISTRATIVE APPOINTMENTS:

2010 - 2018 Off-campus Faculty in Medical Physics, Department of Radiation Oncology, Wayne State University, Detroit, MI
2010 - 2018 Member, Developmental Therapeutics, JFCC, Henry Ford Health System
2012 Grant Reviewer for BMIT-B Study Section, National Institutes of Health
2013 Grant Reviewer for Early Career Research Grant, Central Michigan University
2015 - 2018 Adjunct Professor in Medical Physics, Department of Physics, Oakland University, Rochester, MI

SPECIALTY BOARDS AND CERTIFICATION:

Board Certified	Issue Date	Expiration
ABR certification in Radiological Therapeutic Physics	2016	None

MEMBERSHIPS IN HONORARY AND PROFESSIONAL SOCIETIES:

American Society for Radiation Oncology (ASTRO) (Member)
American Association of Physicists in Medicine (AAPM) (Member)

RESEARCH GRANTS/AWARDS/CONTRACTS/PROJECTS:

Active

Peer Review

Title:	Physiological adaptive radiotherapy for prostate cancer treatment
Source:	American Cancer Society (RSG-15-137-01-CCE)
Role:	Co-investigator
PI:	Ning Wen, PhD
Dates:	01/2016 - 12/2019

Prior

Peer Review

Title:	An accurate dose mapping (reconstruction) method for adaptive treatment planning for lung and head and neck cancers
Source:	Research Contract, Varian Medical Systems
Role:	Co-investigator; 3 calendar months
PI:	Indrin Chetty, PhD
Dates:	2009 - 2011
Title:	To quantify deformable image registration errors in IGRT
Source:	R01 Research Grant from NIH/NCI
Role:	PI
PI:	Hualiang Zhong, PhD
Dates:	06/2010 - 05/2015
Title:	Clinical implementation and investigation of adaptive radiotherapy for prostate cancer
Source:	Varian Master Research Agreement, Varian Medical Systems
Role:	Co-investigator; 0.6 calendar months
PI:	Indrin Chetty, PhD
Dates:	2011 - 2018
Title:	Deformable image registration errors and dosimetric consequences in IGART
Source:	Henry Ford Research Bridge Funding
Role:	PI
PI:	Hualiang Zhong, PhD
Dates:	01/2016 - 06/2018

INVITED LECTURES/WORKSHOPS/PRESENTATIONS:

Regional

Zhong H, Weiss E, Siebers J, Detecting Dose Reconstruction Errors (Oral Presentation), American Association of Physicists in Medicine (AAPM), Minneapolis, MN, 07/22/2007 - 07/26/2007

Zhong H, Kim J, Glide-Hurst C, Chetty I, Dosimetric Consequences of Deformable Image Registration Errors for Lung SBRT Patients (Oral Presentation), American Association of Physicists in Medicine (AAPM), Indianapolis, IN, 08/04/2013 - 08/08/2013

Zhong H, Sharifi H, Kong FM, Chetty IJ, Quantification of parametric response maps for response-guided adaptive radiotherapy (Oral Presentation), American Association of Physicists in Medicine (AAPM), Nashville, TN, 07/29/2018 - 08/02/2018

National

Zhong H, Weiss E, Rosu M, Keall P, Williamson J, Siebers JV, A 4D Monte Carlo Dose Calculation Method for Clinical Applications (Oral Presentation), American Association of Physicists in Medicine (AAPM), Houston, TX, 07/27/2008 - 07/31/2008

Zhong H, Fragoso M, Patel S, Ajlouni M, Movsas B, Chetty IJ, A method to evaluate region-specific pulmonary function using 4D CT images for lung cancer patients undergoing radiation therapy (Oral Presentation), American Association of Physicists in Medicine (AAPM), Anaheim, CA, 07/26/2009 - 07/30/2009

Zhong H, Glide-Hurst C, Chetty I, Development of a Deformable Dosimetric Phantom for Verification of 4D Dose Calculation Algorithms (Oral Presentation), American Association of Physicists in Medicine (AAPM), Charlotte, NC, 07/29/2012 - 08/02/2012

Zhong H, Li S, Wen N, Chetty I, Movsas, B, Region-based Correction of Deformable Image Registration Errors for Adaptive Radiation Therapy (Oral Presentation), American Society for Radiation Oncology (ASTRO), Boston, MA, 10/28/2012 - 11/01/2012

Li M, Chetty I, Zhong H, Benchmark Image-based TCP Calculation for Evaluation of Lung SBRT Margins (Oral Presentation), American Association of Physicists in Medicine (AAPM), Austin, TX, 07/20/2014 - 07/24/2014

Zhong H, Gordon J, Chetty I, Kinetic modeling of tumor response to fractionated radiotherapy (Oral Presentation), American Association of Physicists in Medicine (AAPM), Austin, TX, 07/20/2014 - 07/24/2014

Zhong H, Li H, Gordon J, Chetty IJ, Movsas B, Can We Accurately Accumulate Dose to Regressing Tumors for Adaptive Treatment of Patients with Lung Cancer? (Oral Presentation), American Society for Radiation Oncology (ASTRO), San Antonio, TX, 10/18/2015 - 10/21/2015

Zhong H, Barten K, Movsas B, Chetty IJ, A Mathematical Model of Cancer Stem Cell Kinetics and Response to Radiation Therapy (Oral Presentation), American Association of Physicists in Medicine (AAPM), Denver, CO, 07/30/2017 - 08/03/2017

International

Zhong H, Siebers J, Quantitative evaluation of deformable image registration, International Symposium on Biomedical Imaging, Washington, DC, 2007

Zhong H, Kim J, Chetty I, Development of Benchmark Models to Investigate Displacement Errors in Deformable Image Registration, International Conference on the use of Computers in Radiation Therapy, Amsterdam, The Netherlands, 2010

Zhong H, Ding M, Movsas B, Chetty I, Development of a Patient-specific Model for Calculation of Pulmonary Function, Third International Conference on Digital Image Processing, Chendu, China, 04/2011

Zhong H, Li H, Siebers J, Chetty I, Monte Carlo-based Optimization for Lung SBRT Treatment Planning, Joint American Association of Physicists in Medicine (AAPM) / Canadian Organization of Medical Physicists (COMP), Vancouver, British Columbia, Canada, 07/31/2011 - 08/04/2011

Zhong H, Stanley N, Chetty I, A framework for 4D and adaptive planning workflow incorporating Monte Carlo-based optimization and dose calculation (Oral Presentation), Joint American Association of Physicists in Medicine (AAPM) / Canadian Organization of Medical Physicists (COMP), Vancouver, British Columbia, Canada, 07/31/2011 - 08/04/2011

Zhong H, Gordon J, Ajlouni M, Movsas B, Chetty IJ, Morphological Analysis of Deformable Image Registration on Regressed Tumors for Adaptive Radiotherapy of Lung Cancer Patients, Switzerland, 2015

Zhong H, Liu C, Mao W, Chetty IJ, Utilizing the Principle of Energy Conservation to Evaluate Dose Accumulation for Adaptive Treatment Planning, International Conference on the use of Computers in Radiation Therapy, London, UK, 06/2016

Zhong H, Sharifi H, Li H, Mao W, Chetty IJ, Prognostic Modeling and Analysis of Tumor Response to Fractionated Radiotherapy for Patients with Squamous Cell Lung Cancer, 5th International Work-Conference on Bioinformatics and Biomedical Engineering, Granada, Spain, 04/2017

MANUSCRIPT REVIEWER:

2005 - Present Medical Physics, Int. Journal of Rad. Onc. Bio Phys., Radiotherapy and Oncology, Physics in

Medicine and Biology, Acta Oncology, Journal of Biomechanics, International Journal of Computer-Assisted Radiology and Surgery, IEEE Trans. Med Imaging, Nature-Scientific Report

BIBLIOGRAPHY

Refereed Journal Publications/Original Papers

1. **Zhong H,** Brown S, Devpura S, Li XA, Chetty IJ. Kinetic modeling of tumor regression incorporating the concept of cancer stem-like cells for patients with locally advanced lung cancer. Theor Biol Med Model. 2018 Dec 27;15(1):23. PMCID: PMC6307263
2. Sharifi H, Zhang H, Bagher-Ebadian H, Lu W, Ajlouni MI, Jin JY, Kong FS, Chetty IJ, Zhong H. Utilization of a hybrid finite-element based registration method to quantify heterogeneous tumor response for adaptive treatment for lung cancer patients. Phys Med Biol. 2018 Mar 21;63(6):065017. PMCID: PMC6242271
3. Mao W, Gardner SJ, Snyder KC, Wen NW, **Zhong H,** Li H, Jackson P, Shah M, Chetty IJ. On the improvement of CBCT image quality for soft tissue-based SRS localization. J Appl Clin Med Phys. 2018 Nov;19(6):177-184. PMCID: PMC6236842
4. Riyahi S, Choi W, Liu CJ, **Zhong H,** Wu AJ, Mechalakos JG, Lu W. Quantifying local tumor morphological changes with Jacobian map for prediction of pathologic tumor response to chemo-radiotherapy in locally advanced esophageal cancer. Phys Med Biol. 2018 Jul 19;63(14):145020. PMCID: PMC6064042
5. Xi J, Si X, Dong H, Zhong H. Effects of glottis motion on airflow and energy expenditure in a human upper airway model. European Journal of Mechanics - B/Fluids. Volume 72 (11), 23-37, 2018.
6. **Zhong H,** Chetty IJ. Adaptive radiotherapy for NSCLC patients: utilizing the principle of energy conservation to evaluate dose mapping operations. Phys Med Biol. 2017 Jun 7;62(11):4333-4345. PMCID: PMC5726231
7. **Zhong H,** Siddiqui SM, Movsas B, Chetty IJ. Evaluation of adaptive treatment planning for patients with non-small cell lung cancer. Phys Med Biol. 2017 Jun 7;62(11):4346-4360. PMCID: PMC5726229
8. **Zhong H,** Jin J, Technical advances and challenges in adaptive radiotherapy for patients with locally advanced NSCLC, Ann Radiat Ther Oncol. 2017; 1(1): 1008.
9. **Zhong H,** Chetty IJ. Caution Must Be Exercised When Performing Deformable Dose Accumulation for Tumors Undergoing Mass Changes During Fractionated Radiation Therapy. Int J Radiat Oncol Biol Phys. 2017 Jan 1;97(1):182-183. PMID: 27979447
10. **Zhong H,** Chetty I. In Reply to Hugo et al. Int J Radiat Oncol Biol Phys. 99(5): 1310. DOI: 10.1016/j.ijrobp.2017.08.049. 2017.
11. Qin Y, **Zhong H,** Wen N, Snyder K, Huang Y, Chetty IJ. Deriving detector-specific correction factors for rectangular small fields using a scintillator detector. J Appl Clin Med Phys. 2016 Nov 8;17(6):379-391. PMCID: PMC5690516
12. **Zhong H,** Adams J, Glide-Hurst C, Zhang H, Li H, Chetty IJ. Development of a deformable dosimetric phantom to verify dose accumulation algorithms for adaptive radiotherapy. J Med Phys. 2016 Apr-Jun;41(2):106-14. PMCID: PMC4870999
13. Gordon JJ, Snyder K, **Zhong H,** Barton K, Sun Z, Chetty IJ, Matuszak M, Ten Haken RK. Extracting the normal lung dose-response curve from clinical DVH data: a possible role for low dose hyper-radiosensitivity, increased radioresistance. Phys Med Biol. 2015 Sep 7;60(17):6719-32. PMCID: PMC4761430
14. **Zhong H,** Wen N, Gordon J, Movsas B, and Chetty I. An Adaptive MRI-CT Image Registration Method for MRI-guided Radiotherapy for Prostate Cancer Patients. Physics in Medicine and Biology. 60(7): 2837-2851, 2015.
15. Kumarasiri A, Liu C, Siddiqui F, **Zhong H,** Chetty IJ, Kim J. Target and organ dose estimation from intensity modulated head and neck radiation therapy using 3 deformable image registration algorithms. Pract Radiat Oncol. 2015 Jul-Aug;5(4):e317-25. PMID: 25752720
16. Zhang H, **Zhong H,** Barth RF, Cao M, Das IJ. Impact of dose size in single fraction spatially fractionated (grid) radiotherapy for melanoma. Med Phys. 2014 Feb;41(2):021727. PMID: 24506618
17. Li HS, **Zhong H,** Kim J, Glide-Hurst C, Gulam M, Nurushev TS, Chetty IJ. Direct dose mapping versus energy/mass transfer mapping for 4D dose accumulation: fundamental differences and dosimetric consequences. Phys Med Biol. 2014 Jan 6;59(1):173-88. PMCID: PMC3980482
18. **Zhong H,** Chetty I. A note on modeling of tumor regression for estimation of radiobiological parameters.

Med Phys. 2014 Aug;41(8):081702. PMCID: PMC4105966
19. Kumarasiri A, Siddiqui F, Liu C, Yechieli R, Shah M, Pradhan D, **Zhong H,** Chetty IJ, Kim J. Deformable image registration based automatic CT-to-CT contour propagation for head and neck adaptive radiotherapy in the routine clinical setting. Med Phys. 2014 Dec;41(12):121712. PMID: 25471959
20. Li S, Glide-Hurst C, Lu M, Kim J, Wen N, Adams JN, Gordon J, Chetty IJ, Zhong H. Voxel-based statistical analysis of uncertainties associated with deformable image registration. Phys Med Biol. 2013 Sep 21;58(18):6481-94. PMCID: PMC4068011
21. Kim J, Kumar S, Liu C, **Zhong H,** Pradhan D, Shah M, Cattaneo R, Yechieli R, Robbins JR, Elshaikh MA, Chetty IJ. A novel approach for establishing benchmark CBCT/CT deformable image registrations in prostate cancer radiotherapy. Phys Med Biol. 2013 Nov 21;58(22):8077-97. PMCID: PMC4090712
22. Stanley N, Glide-Hurst C, Kim J, Adams J, Li S, Wen N, Chetty IJ, Zhong H. Using patient-specific phantoms to evaluate deformable image registration algorithms for adaptive radiation therapy. J Appl Clin Med Phys. 2013 Nov 4;14(6):4363. PMCID: PMC4041490
23. Wen N, Kumarasiri A, Nurushev T, Burmeister J, Xing L, Liu D, Glide-Hurst C, Kim J, **Zhong H,** Movsas B, Chetty IJ. An assessment of PTV margin based on actual accumulated dose for prostate cancer radiotherapy. Phys Med Biol. 2013 Nov 7;58(21):7733-44. PMCID: PMC4073000
24. **Zhong H,** Chetty IJ. Generation of a novel phase-space-based cylindrical dose kernel for IMRT optimization. Med Phys. 2012 May;39(5):2518-23. PMCID: PMC3344881
25. Glide-Hurst C, Chen D, **Zhong H,** Chetty IJ. Changes realized from extended bit-depth and metal artifact reduction in CT. Med Phys. 2013 Jun;40(6):061711. PMID: 23718590
26. Si XA, Xi J, Kim J, Zhou Y, Zhong H. Modeling of release position and ventilation effects on olfactory aerosol drug delivery. Respir Physiol Neurobiol. 2013 Mar 1;186(1):22-32. PMID: 23313127
27. **Zhong H,** Kim J, Li H, Nurushev T, Movsas B, Chetty IJ. A finite element method to correct deformable image registration errors in low-contrast regions. Phys Med Biol. 2012 Jun 7;57(11):3499-515. PMCID: PMC3360965
28. Wen N, Glide-Hurst C, Nurushev T, Xing L, Kim J, **Zhong H,** Liu D, Liu M, Burmeister J, Movsas B, Chetty IJ. Evaluation of the deformation and corresponding dosimetric implications in prostate cancer treatment. Phys Med Biol. 2012 Sep 7;57(17):5361-79. PMCID: PMC3652266
29. Jin JY, Kong FM, Liu D, Ren L, Li H, **Zhong H,** Movsas B, Chetty IJ. A TCP model incorporating setup uncertainty and tumor cell density variation in microscopic extension to guide treatment planning. Med Phys. 2011 Jan;38(1):439-48. PMID: 21361212
30. **Zhong H,** Jin JY, Ajlouni M, Movsas B, Chetty IJ. Measurement of regional compliance using 4DCT images for assessment of radiation treatment. Med Phys. 2011 Mar;38(3):1567-78. PMCID: PMC3060935
31. Yan C, **Zhong H,** Murphy M, Weiss E, Siebers JV. A pseudoinverse deformation vector field generator and its applications. Med Phys. 2010 Mar;37(3):1117-28. PMCID: PMC2837727
32. **Zhong H,** Kim J, Chetty I, Analysis of deformable image registration accuracy in radiation therapy, Medical Physics, 37: 970-970, 2010
33. Kim J, Hammoud R, Pradhan D, **Zhong H,** Jin RY, Movsas B, Chetty IJ. Prostate localization on daily cone-beam computed tomography images: accuracy assessment of similarity metrics. Int J Radiat Oncol Biol Phys. 2010 Jul 15;77(4):1257-65. PMID: 20378271
34. **Zhong H,** Siebers JV. Monte Carlo dose mapping on deforming anatomy. Phys Med Biol. 2009 Oct 7;54(19):5815-30. PMCID: PMC2849146
35. Siebers JV, Zhong H. An energy transfer method for 4D Monte Carlo dose calculation. Med Phys. 2008 Sep;35(9):4096-105. PMCID: PMC2663593
36. **Zhong H,** Weiss E, Siebers JV. Assessment of dose reconstruction errors in image-guided radiation therapy. Phys Med Biol. 2008 Feb 7;53(3):719-36. PMCID: PMC2819061
37. Suh Y, Weiss E, **Zhong H,** Fatyga M, Siebers JV, Keall PJ. A deliverable four-dimensional intensity-modulated radiation therapy-planning method for dynamic multileaf collimator tumor tracking delivery. Int J Radiat Oncol Biol Phys. 2008 Aug 1;71(5):1526-36. PMCID: PMC2600678
38. **Zhong H,** Peters T, Siebers JV. FEM-based evaluation of deformable image registration for radiation therapy. Phys Med Biol. 2007 Aug 21;52(16):4721-38. PMID: 17671331
39. **Zhong H,** Peters T. A real time hyperelastic tissue model. Comput Methods Biomech Biomed Engin. 2007 Jun;10(3):185-93. PMID: 17558647
40. Murphy MJ, Wei ZP, Fatyga M, Zhong H. Sensitivity of parametric deformable image registration to image noise. International Journal of Computer-Assisted Radiology and Surgery. 2: S52 – S53, 2007.
41. **Zhong H,** Wachowiak MP, Peters TM. A real time finite element based tissue simulation method incorporating nonlinear elastic behavior. Comput Methods Biomech Biomed Engin. 2005

Jun;8(3):177-89. PMID: 16214712
42. **Zhong H,** Wachowiak MP, Peters TM. Enhanced pre-computed finite element models for surgical simulation. Stud Health Technol Inform. 2005;111:622-8. PMID: 15718810
43. Boivin A., Zhong H. Completeness of systems of complex exponentials and the Lambert_W functions. Transactions of the American Mathematical Society, Vol. 359 (4); 1829-1849. 2007
44. **Zhong H,** Boivin A, Peters T. Explicit bounds of complex exponential frames. Journal of Inequalities and Applications. 1-12; doi:10.1155/JIA/2006/38173; 2006
45. **Zhong H,** Boivin A, The series expansion of complex exponentials. Houston Journal of Mathematics. Vol. 31 (3); 937-956. 2005
46. Zhong H. Entire functions that share one value with their derivatives. Kodai Math. J. Vol.18 (2): 250-259. 1995
47. Zhong H. A note on the iterates of exp(pzn-1+qzn). Bull. Malay. Math. Soc. Vol.17 (2). 1995
48. Zhong H. Unicity theorems for meromorphic functions with several deficient values. J. Nanjing U. of Aeronautics & Astronautics. Vol.27; No.2; 1995
49. Zhong H. On the convergence of the series ??-1? ??? (a?, f). J. Nanjing U. of Aeronautics & Astronautics. Vol.26; No.5; p582-587. 1994
50. Zhong H. A class of meromorphic functions with the maximum sum of deficiencies. Acta Math. Sinica. Vol.37(4): 544-550. 1994
51. Zhong H. An improvement of R. Nevanlinna's Second Fundamental Theorem. Advances in Mathematics (Chinese). Vol.22 (5): 449-453. 1993
52. Zhong H. Meromorphic functions with maximum sum of defects. J. Math. Res. Exposition. Vol.13 (4): 583-588. 1993
53. Zhong H. A generalization of F. Nevanlinna's Conjecture. Acta Math. Sinica. Vol.36 (1): 90-98. 1993
54. Zhong H. Non-Harmonic Fourier Series and Applications. PhD Thesis. U. of Western Ontario. 2000
55. Sharifi H, Brown S, McDonald GC, Chetty IJ, Zhong H. 4-Dimensional computed tomography-based ventilation and compliance images for quantification of radiation-induced changes in pulmonary function. J Med Imaging Radiat Oncol. 2019 Jun;63(3):370-377.
56. Xi J, April Si X, Dong H, Zhong H. Effects of glottis motion on airflow and energy expenditure in a human upper airway model European Journal of Mechanics, B/Fluids. November - December 2018;72:23-37.
57. Riyahi S, Choi W, Liu CJ, Nadeem S, Tan S, **Zhong H,** Chen W, Wu AJ, Mechalakos JG, Deasy JO, Lu W. Quantification of local metabolic tumor volume changes by registering blended PET-CT images for prediction of pathologic tumor response Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics). 2018;11076 LNCS:31-41.
58. **Zhong H,** Chetty IJ. In Reply to Hugo et al. Int J Radiat Oncol Biol Phys. 2017 Dec 01;99(5):1310.
59. **Zhong H,** Siddiqui SM, Movsas B, Chetty IJ. Evaluation of adaptive treatment planning for patients with non-small cell lung cancer. Phys Med Biol. 2017 Jun 07;62(11):4346-4360. PMCID: PMC5726229
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61. Qin Y, **Zhong H,** Wen N, Snyder K, Huang Y, Chetty IJ. Deriving detector-specific correction factors for rectangular small fields using a scintillator detector. J Appl Clin Med Phys. 2016 Nov 08;17(6):379-391. PMCID: PMC5690516
62. Gordon JJ, Snyder K, **Zhong H,** Barton K, Sun Z, Chetty IJ, Matuszak M, Ten Haken RK. Extracting the normal lung dose-response curve from clinical DVH data: a possible role for low dose hyper-radiosensitivity, increased radioresistance. Phys Med Biol. 2015 Sep 07;60(17):6719-32. PMCID: PMC4761430
63. **Zhong H,** Chetty IJ. Adaptive radiotherapy for NSCLC patients: utilizing the principle of energy conservation to evaluate dose mapping operations. Phys Med Biol. 2017 Jun 07;62(11):4333-4345. PMCID: PMC5726231
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65. **Zhong H,** Adams J, Glide-Hurst C, Zhang H, Li H, Chetty IJ. Development of a deformable dosimetric phantom to verify dose accumulation algorithms for adaptive radiotherapy. J Med Phys. 2016;41(2):106-14. PMCID: PMC4870999

66. **Zhong H,** Wen N, Gordon JJ, Elshaikh MA, Movsas B, Chetty IJ. An adaptive MR-CT registration method for MRI-guided prostate cancer radiotherapy. Phys Med Biol. 2015 Apr 07;60(7):2837-51. PMCID: PMC4386880
67. Kumarasiri A, Liu C, Siddiqui F, **Zhong H,** Chetty IJ, Kim J. Target and organ dose estimation from intensity modulated head and neck radiation therapy using 3 deformable image registration algorithms. Pract Radiat Oncol. 2015;5(4):e317-25.
68. **Zhong H,** Kim J, Gordon JJ, Brown SL, Movsas B, Chetty IJ. Morphological analysis of tumor regression and its impact on deformable image registration for adaptive radiotherapy of lung cancer patients IFMBE Proceedings. 2015;51:579-582.
69. Gordon JJ, Snyder K, **Zhong H,** Barton K, Sun Z, Chetty IJ, Matuszak M, Haken RKT. Radiation pneumonitis and low dose radiation hypersensitivity IFMBE Proceedings. 2015;51:1712-1716.
70. Liu C, Kumarasiri A, Kamal M, Chetvertkov M, Gordon J, **Zhong H,** Siddiqui F, Chetty IJ, Kim J. An automatic dosimetric and geometric tracking system for head and neck adaptive radiotherapy IFMBE Proceedings. 2015;51:570-574.
71. Kumarasiri A, Siddiqui F, Liu C, Yechieli R, Shah M, Pradhan D, **Zhong H,** Chetty IJ, Kim J. Deformable image registration based automatic CT-to-CT contour propagation for head and neck adaptive radiotherapy in the routine clinical setting. Med Phys. 2014 Dec;41(12):121712.
72. **Zhong H,** Chetty I. A note on modeling of tumor regression for estimation of radiobiological parameters. Med Phys. 2014 Aug;41(8):081702. PMCID: PMC4105966
73. Zhang H, **Zhong H,** Barth RF, Cao M, Das IJ. Impact of dose size in single fraction spatially fractionated (grid) radiotherapy for melanoma. Med Phys. 2014 Feb;41(2):021727.
74. **Zhong H,** Cai J, Glide-Hurst C, Chetty IJ. An adaptive finite element method to cope with a large scale lung deformation in magnetic resonance images 2014 IEEE 11th International Symposium on Biomedical Imaging, ISBI 2014. 29 July 2014:770-773.
75. Li HS, **Zhong H,** Kim J, Glide-Hurst C, Gulam M, Nurushev TS, Chetty IJ. Direct dose mapping versus energy/mass transfer mapping for 4D dose accumulation: fundamental differences and dosimetric consequences. Phys Med Biol. 2014 Jan 06;59(1):173-88. PMCID: PMC3980482
76. Stanley N, Glide-Hurst C, Kim J, Adams J, Li S, Wen N, Chetty IJ, Zhong H. Using patient-specific phantoms to evaluate deformable image registration algorithms for adaptive radiation therapy. J Appl Clin Med Phys. 2013 Nov 04;14(6):4363. PMCID: PMC4041490
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78. Wen N, Kumarasiri A, Nurushev T, Burmeister J, Xing L, Liu D, Glide-Hurst C, Kim J, **Zhong H,** Movsas B, Chetty IJ. An assessment of PTV margin based on actual accumulated dose for prostate cancer radiotherapy. Phys Med Biol. 2013 Nov 07;58(21):7733-44. PMCID: PMC4073000
79. Li S, Glide-Hurst C, Lu M, Kim J, Wen N, Adams JN, Gordon J, Chetty IJ, Zhong H. Voxel-based statistical analysis of uncertainties associated with deformable image registration. Phys Med Biol. 2013 Sep 21;58(18):6481-94. PMCID: PMC4068011
80. Glide-Hurst C, Chen D, **Zhong H,** Chetty IJ. Changes realized from extended bit-depth and metal artifact reduction in CT. Med Phys. 2013 Jun;40(6):061711.
81. Si XA, Xi J, Kim J, Zhou Y, Zhong H. Modeling of release position and ventilation effects on olfactory aerosol drug delivery. Respir Physiol Neurobiol. 2013 Mar 01;186(1):22-32.
82. **Zhong H,** Kim J, Glide?hurst C, Chetty I. TU?C?141?11: Dosimetric Consequences of Deformable Image Registration Errors for Lung SBRT Patients Medical Physics. June 2013;40(6):436.
83. Adams J, Zhong H. TU?C?108?01: Verification of Deformable Dose Calculation with Phantom Measurements Medical Physics. June 2013;40(6):430.
84. Wen N, Glide-Hurst C, Nurushev T, Xing L, Kim J, **Zhong H,** Liu D, Liu M, Burmeister J, Movsas B, Chetty IJ. Evaluation of the deformation and corresponding dosimetric implications in prostate cancer treatment. Phys Med Biol. 2012 Sep 07;57(17):5361-79. PMCID: PMC3652266
85. **Zhong H,** Kim J, Li H, Nurushev T, Movsas B, Chetty IJ. A finite element method to correct deformable image registration errors in low-contrast regions. Phys Med Biol. 2012 Jun 07;57(11):3499-515. PMCID: PMC3360965
86. **Zhong H,** Chetty IJ. Generation of a novel phase-space-based cylindrical dose kernel for IMRT optimization. Med Phys. 2012 May;39(5):2518-23. PMCID: PMC3344881
87. Kim J, Zhong H. TH?A?211?02: Effects of Different Parameters on Deformable Image Registration Medical Physics. June 2012;39(6):3979.

88. Glide?hurst C, **Zhong H,** Altman M, Chen D, Chetty I. WE?C?BRB?01: Dosimetric Changes Realized from Extended Bit?Depth and Metal Artifact Reduction in CT Medical Physics. June 2012;39(6):3943.
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