

## **I. Name and Contacts**

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## **II. Education and Training**

- Medical Physics Residency (July 2003–June 2005), Department of Radiation Oncology, Virginia Commonwealth University, Richmond, VA
- Postdoctoral Research Associate in Medical Physics/Radiation Oncology (2002-2003), Virginia Commonwealth University, Richmond, VA.
- Postdoctoral Research Associate in Medical Physics/Radiation Oncology (2001-2002), Washington University School of Medicine, St. Louis, MO.
- Postdoctoral Research Associate in Atomic and Molecular Physics (1997-2000), Department of Physics, Kansas State University, Manhattan, KS.
- Ph.D. in Atomic and Molecular Physics (1992-1997), Institute of Nuclear Physics, Frankfurt University (Wolfgang Goethe Universitat), Frankfurt, Germany.
- M.Sc. (1990-1991), Department of Physics, Yarmouk University, Irbid, Jordan.
- B.Sc. (1985-1989), Department of Physics, Yarmouk University, Irbid, Jordan.

## **III. Employment and Professional Experience**

2007-present	Clinical Assistant Professor in Medical Physics, Department of Radiation Oncology, University of Oklahoma Health Sciences Center (OUHSC), 800 N.E 10th Street, OKCC, Oklahoma City, OK 73104
2005- 2007	Assistant Attending Medical Physicist (Assistant Professor), Department of Medical Physics/Radiation Oncology, Memorial Sloan-Kettering Cancer Center, New York, NY
2003-2005	Medical Physics Resident, Department of Radiation Oncology, Virginia Commonwealth University, Richmond, VA
2001-2003	Post-Doctoral Research Associate in Medical Physics, Department of Radiation Oncology, Virginia Commonwealth University, Richmond, VA, and Washington University School of Medicine, St. Louis, MO. Worked in the brachytherapy research group of Prof. Dr. Jeffrey F. Williamson.
1997-2001	Post-Doctoral Research Associate, Department of Physics, Kansas State University, Manhattan, KS. Worked on research projects in molecular and atomic physics at the MacDonald Laboratory granted by the DOE.

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#### **IV. Certification**

The American Board of Radiology, Therapeutic Radiologic Physics, 2008

#### **V. Licenses**

- State of New York License, Therapeutic Medical Physics 2005-2007.
- License is not required in Oklahoma.

#### **VI. Research and Scholarships**

##### **Research Initiative**

- Investigation of new dosimetry techniques in brachytherapy.
- Image artifacts in computed tomography imaging induced by motion.
- Motion management and use of deformable image registration in adaptive radiation therapy
- Patient setup and tumor localization accuracy in stereotactic radiation therapy.
- Dose calculation accuracy using different dose calculation algorithms such as pencil beam superposition and convolution and Monte Carlo.
- Accuracy of small field dosimetry in stereotactic radiation therapy.

##### **Grants and Scholarships**

- 2010-2011 Principal Investigator, American Brachytherapy Society (ABS), Research Project: "Adaptive Low-Dose-Rate Prostate Brachytherapy with Ultrasound and CT Image Guidance" Award: \$20,000.
- 2009-2010 Principal Investigator, Department of Radiation Oncology/OUHSC "Image-Guided Radiation Therapy with kV On-Board Imager", Award \$30,000.
- 1993-1997 Deutscher Akademischer Austauschdienst (DAAD), Kennedyallee 50, D-53175 Bonn, Germany, scholarship for Ph.D. graduate study.
- 1985-1989 Jordanian Ministry of Education scholarship during the Bachelors degree.
- 1987-1988 Dean's honor list of distinguished students, Yarmouk University, Irbid, Jordan.

##### **Institutional Review Board**

###### **University of Oklahoma HSC as Investigator, Principle and Co-Principle Investigator (PI)**

- (PI) Image Artifact in Cone- Beam CT – IRB Number 14532, Approval Date – February 24, 2009, At present- open and continuing.
  - (PI) Prostate Brachytherapy with Low Dose Rate Seed Implants – IRB Number 14540, Approval Date –February 27, 2009, At present - open and continuing.
  - (PI) Evaluation of the Accuracy of Dose Calculation with Different Dose Algorithms and Correlation with Tumor and Normal Tissue Response Using Various Imaging Techniques – IRB 15597, Approval Date – November 16, 2010, At present- Active.
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- (Investigator), Single isocenter versus multiple isocenters treatment planning for patients with multiple brain metastases, IRB Number 1802, Approval Date 12/12/2012.
- Single Isocenter versus Multiple Isocenter Stereotactic Treatment Planning for Patients with Multiple Brain Metastases-IRB 1802, Approval date ...

## VII. Publications

### A. Patents

1. **Imad Ali** and Salahuddin Ahmad, "Measurement and modeling of mobile target broadening in helical, axial and cone-beam CT imaging," Patent application – 4313-00300 (13HSC009), filed 3-15-2013, In cooperation with the Intellectual Property Management Office at University of Oklahoma Health Sciences Center.
2. **Imad Ali**, Salahuddin Ahmad and Terence Herman, "Motion Correction in Cone-Beam CT by Tracking Internal and External Markers Using Cone-Beam Projection from a kV On-Board Imager: Four Dimensional Cone Beam CT and Tumor Tracking Implications," Patent application – 4313-00101 (09HSC043), filed 1-17-2011, In cooperation with the Intellectual Property Management Office at University of Oklahoma Health Sciences Center.

### B. Peer-Reviewed Publications: (Mentor\*)

1. **Imad Ali**, Nesreen Alsbou, Justin Juskowiak and Salahuddin Ahmad. "Quantitative evaluation of the performance of different deformable image registration algorithms in helical, axial and cone-beam CT images using a mobile phantom" *Journal of Applied Clinical Medical*;19(2):62-73. doi: 10.1002/acm2.12246. (2018).
  2. **Imad Ali**, Nesreen Alsbou, John-Michelle Taguenang, Salahuddin Ahmad. "Quantitative evaluation by measurement and modeling of the variations in dose distributions deposited in mobile targets." *X-Ray Science and Technology*, 2017 Mar 3. doi: 10.3233/XST-16223.
  3. Nesreen Alsbou, Salahuddin Ahmad, **Imad Ali**, "A motion algorithm to extract physical and motion parameters of mobile targets from cone-beam computed tomographic images" *Journal of X-Ray Science and Technology*,17;24(4):599-613. doi: 10.3233/XST-160577 (2016)
  4. **Imad Ali**, Nesreen Alsbou, Stephen Oyewale, Justin Jaskowiak, Salahuddin Ahmad, Ozer Algan, Evaluation of localization uncertainty of fiducial markers due to length and position variations induced by motion in CT imaging by measurement and modeling" *Gulf Journal of Oncology*, 1(21):21-9 (2016).
  5. Vance Keeling, Sabbir Hossain, Hosang Jin, Salahuddin Ahmad and **Imad Ali**, "Quantitative evaluation of patient setup uncertainty of stereotactic radiotherapy with the frameless 6D-ExacTrac system using statistical modeling", *Journal of Applied Clinical Medical Physics*,17(3):5959 (2016).
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6. Hosang Jin, Vance Keeling, **Imad Ali** and Salahuddin Ahmad, "Dosimetric effects of positioning shifts using 6D-frameless stereotactic BrainLab system in hypo-fractionated intracranial radiotherapy", *Journal of Applied Clinical Medical Physics*, 17(1): 5682, (2016).
  7. O. Algan, M. Confer, S. Algan, C. Matthiesen, S. Ahmad, T. Herman and **I. Ali**, "Quantitative Evaluation of the Correlation of Dose, FDG-PET Uptake Value and Chest Wall Complications in Patients with Lung Cancer Treated with Stereotactic Body Radiation Therapy", Accepted for the *Journal of X-Ray Science and Technology*,40(4):314-7. doi: 10.1016/j.meddos.2015.04.001. (2015).
  8. **Imad Ali**, Selam Negusse, Salahuddin Ahmad and Ozer Algan, Quantitative evaluation of the dosimetric effects of balloon deformation and source position in high-dose rate mammosite breast brachytherapy, *Gulf Journal of Oncology*, 18, 54-63 (2015).
  9. O. Algan, J. Giem, J. Young, **I. Ali**, S. Ahmad and S. Hossain, Comparison of doses received by the hippocampus in patients treated with single versus multiple isocenter based stereotactic radiation therapy to the brain for multiple brain metastases,pii: S0958-3947(15)00034-5. doi: 10.1016/j.meddos.2015.04.001, *Medical Dosimetry* (2015)
  10. **Imad Ali**, Nesreen Alsbou , Salahuddin Ahmad, Modeling and measurement of the variations of CT number distributions for mobile targets in cone-beam computed tomographic imaging, Accepted by the *Journal of Applied Clinical Medical Physics*, 2015 Jan 8;16(1):5067. doi: 10.1120/jacmp.v16i1.5067.
  11. **Imad Ali** , Nesreen Alsbou, Ozer Algan, Terence Herman, Salahuddin Ahmad, Quantitative assessment by measurement and modeling of mobile target elongation in cone-beam computed tomographic imaging. *Journal of Applied Clinical Medical Physics*, 2014 May 8;15(3):4634. doi: 10.1120/jacmp.v15i3.4634.
  12. **Imad Ali**, Steven Jackson, Nesreen Alsbou, and Salahuddin Ahmad, Theoretical modeling of mobile target broadening in helical and axial computed tomographic, *Journal of X-Ray Science and Technology*, 22(3): 351:60 (2014).
  13. Gunter T., **Ali I.**, Matthiesen C., Machiorlatti M., Thompson D., Algan O., Gross Tumor Volume Variations in Primary Non-Small-Cell Lung Cancer during the Course of Treatment with Stereotactic Body Radiation Therapy" *Journal of Medical Imaging and Radiation Oncology*, doi: 10.1111/1754-9485.12168 (2014).
  14. **Imad Ali**, Nesreen Alsbou, Ozer Agan, Terence Herman and Salahuddin Ahmad "Quantitative Assessment by Measurement and Modeling of Mobile Target Elongation in Cone-Beam Computed Tomographic Imaging", *Journal of Applied Clinical Medical Physics*, 15(3) 266-274(2014) .
  15. **Imad Ali**, and Salahuddin Ahmad, Evaluation of dose calculation using pencil beam and Monte Carlo algorithms in a clinical treatment planning system for various treatment sites. Accepted by the *journal of Medical Dosimetry*, 38(3):255-61 (2013).
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16. **Imad Ali**, Ozer Algan, Spencer Thompson, Puneet Sindhvani, and Salahuddin Ahmad, A Nomogram Model to Consider the Enlarged Transient Prostate Volume Due to Edema in Brachytherapy Seed Implants. *Gulf Journal of Oncology*,13: 6-14 (2013).
  17. Yida Hu, Salahuddin Ahmad and **Imad Ali\***, Optimization of the scanning parameters in the digitization of EBT1 and EBT2 Gafchromic films dosimetry with flatbed scanners. Accepted for publication in the *Journal of X-Ray Science and Technology*, 20(4): 385-393 (2012).
  18. Algan O, Jamgade A, **Ali I**, Christie A, Thompson JS, Thompson D, Ahmad S and Herman T. The dosimetric impact of daily setup error on target volumes and surrounding normal tissue in the treatment of prostate cancer with intensity-modulated radiation therapy. *Medical Dosimetry*, 37 (4): 406-411 (2012).
  19. **Imad Ali**, Salahuddin Ahmad, Nesreen Alsbou, Dale-Michael Lovelock, Sergey Kriminski, and Howard Amols, Correction of image artifacts from treatment couch in cone-beam CT from kV on-board imaging. *Journal of X-Ray Sciences and Technology*, 19(3): 321-32 (2011).
  20. **Imad Ali**, Nesreen Alsbou, Terrance Herman and Salahuddin Ahmad. A three-dimensional motion correction algorithm in cone-beam CT by marker tracking in the projections from a kV on-board imager: four-dimensional cone-beam CT and tumor tracking implications. *Journal of Applied Clinical Medical Physics*, 12(2): 3407 (2011).
  21. **Imad Ali** , Chance Matthiesen, Ozer Algan, Spencer Thompson, Carl Bogardus, Terence Herman and Salahuddin Ahmad, Quantitative evaluation of increase in skin dose by immobilization thermoplastic masks and superficial dosimetry using Gafchromic EBT film measurements and Monte Carlo calculations. *Journal of X-Ray Science and Technology*, 18(3): 319-26, (2010).
  22. **Imad Ali**, Jesse Tubbs, Kerry Hibbitts, Ozer Algan, Spencer Thompson, Terence Herman and Salahuddin Ahmad, Evaluation of the setup accuracy of a stereotactic radiotherapy head immobilization mask system using kV on-board imaging. *Journal of Applied Clinical Medical Physics*, 11(3): 3192 (2010).
  23. **Imad Ali**, Ozer Algan, Spencer Thompson, Puneet Sindhvani, Terence Herman, Chih-Yao Cheng and Salahuddin Ahmad, A comparative study of seed localization and dose calculation on pre- and post-implantation ultrasound and CT images for low-dose-rate prostate brachytherapy. *Physics in Medicine and Biology*, 54: 5595-5611 (2009).
  24. **Imad Ali** and Salahuddin Ahmad, Evaluation of the effects of sagging shifts on isocenter accuracy and image quality of cone-beam CT from a kV on-board imager. *Journal of Applied Clinical Medical Physics in Medicine*, 10: 180-194 (2009).
  25. **Imad Ali**, Salahuddin Ahmad, Surej Joel and Jeffery F. Williamson, Optimal densitometry wavelengths that maximize radiochromic film sensitivity while minimizing OD growth and temperature sensitivity artifacts. *Journal of X-Ray Science and Technology*, 17: 61-73 (2009).
  26. Sergey A. Kriminski, D. Michael Lovelock, Venkatraman E. Seshan, **Imad Ali**, Peter Munro, Howard I. Amols, Zvi Fuks, Mark Bilsky and Yoshiya Yamada, Comparison of Kilovoltage Cone-Beam Computed Tomography With Megavoltage Projection Pairs for Paraspinal Radiosurgery Patient Alignment and Position Verification. *International Journal of Radiation Oncology Biology Physics*, 71(5): 1572-1580 (2008).
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27. Yi Le, **Imad Ali**, James F. Dempsey and Jeffrey F. Williamson , Prospects for quantitative two-dimensional radiochromic film dosimetry for low dose-rate brachytherapy sources, *Medical Physics*, 33: 4622 (2006).
  28. **I. Ali**, J. F. Williamson, C. Costescue, and J. F. Dempsey, Dependence of Radiochromic Film Response Kinetics on Dose Fraction. *Applied Radiation and Isotopes*, 62: 609-617 (2005).
  29. Slobodan Devic, Jan Seuntjens, Gyorgy Hegyi, Ervin B. Podgorsak, Christopher G. Soars, Assen S. Kirov, **Imad Ali**, Jeffrey F. Williamson and Angel Elizondo. Dosimetric Properties of Improved GafChromic Films for Seven Different Digitizers. *Medical Physics*, 31: 2392 (2004).
  30. **I. Ali**, C. Costescu, M. Vicic, J. F. Dempsey and J. F. Williamson, Dependence of Radiochromic Film Optical Density Post-Exposure Kinetics on Dose and Dose Fractionation. *Medical Physics*, 30: 1958 (2003).
  31. A. Landers, Th.Weber, **I. Ali**, A. Cassimi, M. Hattass, O. Jagutzki, A. Nauert, T. Osipov, A. Staudte, M.H. Prior, H. Schmidt-Böcking C.L. Cocke and R. Dörner. Photoelectron Diffraction Mapping: Molecules Illuminated from Within in: Photonic Electronic and Atomic Collisions proceedings of the ICPEAC 2001, Rinton Press, pp149-152 (2002).
  32. **I. Ali**, R. D. Dubios, C. L. Cocke, S. Hagmann, R. Feeler and R.E. Olson. Dynamics of the Fragmentation of  $D_2$  by Fast Protons and Slow Highly Charged  $Xe^{26+}$ . *Phys. Rev. A*, Vol. 64, 022712 (2001).
  33. A. Landers, T. Weber, **I. Ali**, M. Hatass, O. Jagutzki, A. Nauert, T. Osipov, A. Staudte, A. Cassimi, H. Schmidt-Böcking, M. H. Prior, C. L. Cocke and R. Dörner, Photoelectron Diffraction Mapping: Molecules Illuminated from Within. *Phys. Rev. Lett.* , Vol. 87, 013002 (2001).
  34. T. Weber, O Jagutzki, M Hattass, A Staudte, A Nauert, L Schmidt, M H Prior, A L Landers, A Bräuning-Demian, H Bräuning, C L Cocke, T Osipov, **I Ali**, R Díez Muiño, D Rolles, F J García de Abajo, C S Fadley, M A Van Hove, A Cassimi, H Schmidt-Böcking and R Dörner K-shell photoionization of CO and  $N_2$ : is there a link between the photoelectron angular distribution and the molecular decay dynamics? *J. Phys. B: At. Mol. Opt. Phys.* 34 No 18: 3669-3678 (2001).
  35. R. D. Dubios, **I. Ali**, C. L. Cocke, S. Hagmann, R. Feeler and R.E. Olson. Three-Body Effect in the Fragmentation of  $D_2$  by Slow Highly Charged Xenon. *Phys. Rev. A*, Vol. 62, 060701 (Rapid Communications) (2000).
  36. **I. Ali**, R. Dörner, O. Jaguzki, S. Nüttgens, V. Mergel, L. Spielberger, Kh. Khayyat, T. Vogt, H. Bräuning, K. Ullmann, R. Moshhammer, J. Ullrich, S. Hagmann, K.-O. Groeneveld, C. L. Cocke and H. Schmidt-Böcking. Multi-Hit Detector System for Complete Momentum Balance in Spectroscopy in Molecular Fragmentation Processes. *Nuclear Instruments and Methods in Physics Research B* 149: 490-500 (1999).
  37. Siegbert Hagmann and **Imad Ali**, Momentum Profiles for Single and Many-Electron Continua in Strongly Perturbing Collisions of Heavy Ions with He, Ne and Ar. *Physica Scripta* T80: 329 (1999).
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38. R. Dörner, T. Vogt, V. Mergel, H. Khemliche, S. Kravis, C. L. Cocke, J. Ullrich, M. Unverzagt, L. Spielberger, M. Damrau, O. Jagutzki, **I. Ali**, B. Weaver, K. Ullmann, C. C. Hsu, M. Jung, E. P. Kanter, B. Sonntag, M. H. Prior, E. Rotenberg, T. Warwick, S. T. Mason, H. Schmidt-Böcking. Ratio of Cross Section for Double to Single Ionization of He by 85- 400 eV Photons. *Phys. Rev. Lett.* 76: 2654 (1999).
39. H. Schmidt-Böcking, M. Achler, **I. Ali**, H. Brauning, C. L. Cocke, R. Dörner, O. Jagutzki, T. Kambara, Kh. Khayyat, V. Mergel, R. Moshhammer, M. H. Prior, L. Spielberger, W. Schmidt, K. Ullmann-Pfleger, M. Unverzagt, J. Ullrich, W. Wu. Cold Target Recoil Ion Momentum Spectroscopy. *Acced. Based Atomic Phys. Techn. & Appl.-American Inst. of Phys., AIP-Press, New York*, pp 723-747 (1997).
40. L. Spielberger, O. Jagutzki, R. Dörner, J. Ullrich, U. Meyer, V. Mergel, M. Unverzagt, M. Damrau, T. Vogt, **I. Ali**, Kh. Khayyat, D. Bahr, H.G. Schmidt, R. Frahm and H. Schmidt-Böcking. Separation of Photoabsorption and Compton Scattering Contributions to He Single and Double ionization. *Phys.Rev.Lett.*, 74: 4615, (1995).
41. L. Spielberger, O. Jagutzki, R. Dörner, J. Ullrich, U Meyer, V. Mergel, M. Unverzagt, M. Damrau, T. Vogt, **I. Ali**, Kh. Khayyat, D. Bahr, H. G. Schmidt, R. Frahm and H. Schmidt-Böcking. Experimental Separation of Photoabsorption and Compton Scattering Contributions to He Single and Double Ionization. *The Physics of Electronic and Atomic Collision, XIX International Conference, AIP\_Conf. Proc. 360 (1995) Ed. L.J. Dube, J.B.A. Mitchell J.W. McConkey, C.E. Brion, AIP Press, New York*, pp 773-785 (1995).
42. K. Ullmann, V. Mergel, L. Spielberger, T. Vogt, U. Meyer, R. Dörner, O. Jagutzki, M. Unverzagt, **I. Ali**, J. Ullrich, W. Schmidt, R. Moshhammer, C. L. Cocke, T. Kambara, Y. Awaya and H. Schmidt-Böcking. Cold Target Recoil Ion Momentum Spectroscopy. *Atomic and Molecular Physics, Ed. I. Alvarez and C. Cisneros, T.J. Morgan, World Scientific, Singapore*, pp 269-291 (1995).
43. N Y Ayoub, **I Khalil**, M S Dababneh, A K Abdallah, I M Odeh and M B Maple. The effect of concentration on some superconducting properties of small grain systems of  $GdBa_2Cu_3O_{7-\delta}$  embedded in solid epoxy. *J. Phys.: Condens. Matter* 3: 9467-9474. Printed in the UK (1991).

**C. Abstracts/Conference papers : (Mentor\*)**

1. N. Alsbou, S. Ahmad and **I. Ali\***, Adaptive radiation therapy with 4D CT-number mapping for tissue heterogeneity and 4D-dose optimization and calculation algorithm – **Electronic Poster**, AAPM Annual Meeting 2018.
  2. E. Kendall, S. Ahmad and **I. Ali\***, Dosemetric uncertainties in the electron Monte Carlo dose calculation algorithm in the Eclipse treatment planning system – **General Poster**, AAPM Annual Meeting 2018.
  3. E. Kendall, S. Ahmad and **I. Ali\***, Quantitative investigation of dosimetric uncertainties associated with small electron fields – **General Poster**, AAPM Annual Meeting 2018.
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4. F. Almatouq, S. Ahmad and **I. Ali\***, Dosimetric uncertainties associated with a two-dimensional multiple diode array detector used in dose verification quality assurance due to CT image artifacts – **General Poster**, AAPM Annual Meeting 2018.
  5. **I. Ali**, G. Wright, N. Alsbou and S. Ahmad, Detection and quantification of intensity quantum interference patterns in radiographic imaging with high energy 250 MeV proton beam – **Electronic Poster**, AAPM Annual Meeting 2018.
  6. G. Wright, S. Ahmad, N. Alsbou and **I. Ali\***, Radiographic Imaging with Proton Beams From the MEVION-S250 Therapy System Using Gafchromic Films and Computed Radiographic Plates – **Electronic Poster**, AAPM Annual Meeting 2018.
  7. N. Alsbou, S. Ahmad and **I. Ali\***, Reconstruction of a Lung Motion Model Using the Displacement Vector Fields Obtained From the Deformable Image Registration of 4D-CT Images – **Electronic poster**, AAPM Annual Meeting 2018.
  8. S. Ahmad, E. Kendall and **I. Ali\***, Dosimetric quality assurance of plans calculated with the electron Monte Carlo algorithm with dose measurement using a multiple diode-array detector – **General Poster**, AAPM Annual Meeting 2018.
  9. Sven Ferguson, Salahuddin Ahmad, Ozer Algan, Terence Herman and **Imad Ali\***, Dosimetric Evaluation of Conformal Aperture Multiple Beam Proton Therapy without a Compensator Using Double Scattering MEVION-S250 System - SU-I-GPD-T-243-General Poster (GP), AAPM Annual Meeting 2017.
  10. N. Alsbou, S. Ahmad and **I. Ali\***, An Algorithm to Extract Motion and Physical Parameters of Mobile Targets Imaged with Cone-Beam CT Using Displacement Vector Fields Calculated by Deformable Image Registration Algorithms – TU-C2-GePD-JT-4-Electronic Poster (EP) , AAPM Annual Meeting 2017.
  11. F. Almatouq, S. Ahmad, O. Algan and **I. Ali\***, Quantitative Investigation of Image Artifact in CT Images of a Multiple Diode Array Detector and Their Effects On the Dose Distributions Calculated with AAA and Acuros-XB Algorithms – WE-RAM3-GePD-JT-1- Electronic Poster (EP) AAPM Annual Meeting 2017.
  12. G. Wright, S. Ahmad, O. Algan, T. Herman and **I. Ali\***, Visibility of radiographic imaging with a proton beam from the MEVION-S250 therapy system and quantitative evaluation of image quality and dose - SU-I-GPD-J-81-General Poster (GP) , AAPM Annual Meeting 2017.
  13. S. Ferguson, S. Ahmad, O. Algan, T. Herman and **I. Ali\***, Simulation of conformal arc proton therapy using the MEVION-S250 system considering beam shaping with a multi-leaf collimator - SU-H2-GePD-T-3- Electronic Poster (EP) , AAPM Annual Meeting 2017.
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14. N. Alsbou, S. Ahmad and **I. Ali\***, Evaluation of the performance of a new deformable image registration algorithms based on motion modeling for cone-beam CT images - WE-RAM2-GePD-J(A)-4- Electronic Poster (EP) , AAPM Annual Meeting 2017.
  15. **I. Ali**, N. Alsbou and S. Ahmad, Four-Dimensional Dose Calculation Algorithm Using Displacement Vector Fields from Deformable Image Registration - WE-RAM1-GePD-JT-5- Electronic Poster (GP) , AAPM Annual Meeting 2017.
  16. Joshua Weir, Sheila Algan, **Imad Ali**, Sixia Chen, Ozer Algan, Disparities in and Utilization of Stereotactic Body Radiotherapy (SBRT) in the Management of Primary and Metastatic Lung Cancer: A National Cancer Database Study-Oral Presentation, ISRS-2017 meeting to be held in Montreux, Switzerland (May 28 - June 01, 2017).
  17. Ozer Algan, **Imad Ali**, Salahuddin Ahmad, Treatment Modalities Utilized in the Management of Acoustic Neuromas by Race, Poster, ISRS-2017 meeting to be held in Montreux, Switzerland (May 28 - June 01, 2017).
  18. J. Jaskowiak, N. Alsbou, S. Ahmad and **I. Ali**, Evaluation of the Performance of Different Deformable Image Registration Algorithms in Helical, Axial and Cone-Beam CT Images of a Mobile Phantom – General Poster, AAPM 2016.
  19. **I. Ali**, J. Jaskowiak, N. Alsbou and S. Ahmad, Variations in the Displacement Vector Fields Calculated by Different Deformable Image Registration Algorithms Used in Helical, Axial and Cone-Beam CT Images of a Mobile – General Poster, AAPM 2016.
  20. **I. Ali**, S. Hossain, E. Syzek and S Ahmad, Surface Dose From KV Diagnostic Beams From An On-Board Imager On a Linac Machine Using Different Imaging Techniques and Filters – General Poster, AAPM 2016.
  21. **I. Ali**, N. Alsbou, O. Algan and S. Ahmad, Adaptive Radiation Therapy with a Four-Dimensional Dose Calculation Algorithm That Optimizes Dose Distribution Considering Breathing Motion – General Poster, AAPM 2016.
  22. **I. Ali**, S. Hossain, O. Algan, E. Syzek and S. Ahmad, Positioning and Dosimetric Uncertainties in Image-Guided Radiation Therapy with Respiratory Gating – **General Electronic Poster** Discussion, AAPM 2016.
  23. E. Kendall, O. Algan, **I. Ali**, J. Arntzen, S. Ahmad and S. Hossain, Dosimetric Impact of Multileaf Collimator Leaf Width On Single and Multiple Isocenter Stereotactactic IMRT Treatment Plans for Four Or More Intracranial Tumors – General Poster, AAPM 2016.
  24. K Harpool, T De La Fuente Herman, S Ahmad, **I Ali**, Verification of dose distributions from high-dose-rate brachytherapy Ir-192 source using a multiple-array-diode-detector (MapCheck2) – **SNAP ORAL PRESENTATION**, AAPM 2016.
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25. K Harpool, T De La Fuente Herman, S Ahmad, **I Ali**, Evaluation of the performance of a multiple-array-diode detector for quality assurance tests in high-dose-rate brachytherapy with Ir-192 source – General Poster, AAPM 2016.
  26. O Algan, R Sabater, S Hossain, **I. Ali**, Acoustic Neuroma Tumor Volume (TV) after Gamma Knife (GK) Therapy, LGKS - 2016 Meeting Amsterdam, May 15-19, 2016.
  27. J. Jaskowiak, N. Alsbou, O. Algan, S. Ahmad and **I. Ali\***, CT Number and Size Variations of Well-known Mobile Targets in Deformable Image Registration Algorithms in CT Images with Motion Artifacts Induced by Controlled Motion Patterns, Oral Presentation, AAPM Annual Meeting 2015.
  28. **I. Ali**, N. Alsbou and S. Ahmad, Four-dimensional cone-beam CT algorithm by extraction of physical and motion parameter of mobile targets retrospective to image reconstruction with motion modeling, Poster, AAPM Annual Meeting 2015.
  29. J. Juskowiak, N. Alsbou, S. Ahmad and **I. Ali\***, Correlation of displacement vector fields calculated by deformable image registration algorithms with motion parameters of CT images with well-defined targets and controlled-motion, Poster, AAPM Annual Meeting 2015.
  30. M. Chacko, S. Aldoohan, J. Sonnad, S. Ahmad and **I. Ali\***, Quantitative Evaluation of Dose Distributions from Axial, Helical and Cone-Beam CT Imaging by Measurement Using a Two-Dimensional Diode-Array Detector, Poster, AAPM Annual Meeting 2015.
  31. V. Keeling, H. Jin, S. Hossain, O. Algan, S. Ahmad and **I. Ali\***, Quantitative Evaluation of Patient Setup Accuracy of Stereotactic Radiotherapy with the Frameless 6D-ExacTrac System Using Statistical Modeling, Poster, AAPM Annual Meeting 2015.
  32. S. Hossain, V. Keeling, **I. Ali**, S. Ahmad and O. Algan, Dosimetric Impact of Beam Energies and Jaw Tracking on Intracranial Tumors Using RapidArc, Poster, AAPM Annual Meeting 2015.
  33. M. Chacko, S. Aldoohan, J. Sonnad, S. Ahmad and **I. Ali\***, A Dose Calculation Algorithm for KV Diagnostic Imaging Beams by Empirical Modeling, Poster, AAPM Annual Meeting 2015.
  34. J. Giem, O. Algan, J. Young, **I. Ali**, S. Ahmad and S. Hossain, Evaluation of Treatment Plan Quality of Single and Multiple Isocenter Stereotactic IMRT for Multiple Intracranial Tumors. IJROBP, ASTRO Meeting 2014.
  35. V. Keeling\*, H. Jin, **I. Ali** and S. Ahmad, Dosimetric Impact of Positioning Errors in Hypo-fractionated Cranial Radiation Therapy Using Frameless Stereotactic BrainLAB System, AAPM Annual Meeting 2014.
  36. J-M. Taguenang\*, T. De La Fuente Herman, S. Ahmad and **I. Ali\***, Investigation of the Accuracy of Two-Dimensional Dose Distributions Measurement From High-Dose\_rate Brachytherapy Ir-192 Source Using Multiple-Diode-Array Detector (MapCheck2), AAPM Annual Meeting 2014.
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37. **I. Ali**, N. Alsbou and S. Ahmad, A motion Algorithm to Extract Physical and Motion Parameters of a Mobile Target in Cone Beam Computed Tomographic Imaging Retrospective to Image Reconstruction. AAPM Annual Meeting 2014.
  38. J-M. Taguenang\*, O. Algan, S. Ahmad and **I. Ali\***, Four-Dimensional Dose Calculation Algorithm Considering Variations in Dose Distribution Induced by Sinusoidal One-Dimensional Motion patterns, AAPM Annual Meeting 2014.
  39. V. Keeling\*, H. Jin, S. Hossain, S. Ahmad and **I. Ali\*** on Quantitative Investigation of Random and Systematic Uncertainties From Hardware and Software Components in the Frameless 6D-BrainLAB ExacTrac System, AAPM Annual Meeting 2014.
  40. J. Giem\*, O. Algan, S. Ahmad, **I. Ali**, J. Young and S. Hossain on Dosimetric Impact of Multileaf Collimator Leaf Width On Single and Multiple Isocenter Stereotactic IMRT Treatment Plans for Multiple Brain Tumors, AAPM Annual Meeting 2014.
  41. **I. Ali**, S. Oyewale, N. Alsbou, S. Ahmad and O. Algan on Quantitative Evaluation of Motion Effects On Accuracy of Image-Guided Radiotherapy with Fiducial Markers Using CT Imaging, AAPM Annual Meeting 2014.
  42. O. Algan, J. Giem\*, J. Young, **I. Ali**, S. Ahmad and S. Hossain on Comparison of Doses Received by the Hippocampus in Patients Treated with Single VS Multiple Isocenter Based Stereotactic radiation Therapy to the Brain for Multiple Brain Metastases, AAPM Annual Meeting 2014.
  43. Rebekah Maymani, **Imad Ali**, Spencer Thompson, Salahuddin Ahmad, Ozer Algan, Dosimetric and Clinical Implications of Prostate Volume in Patients Managed with Low-Dose-Rate Interstitial Brachytherapy. American Brachytherapy Society (2014).
  44. Z Nicholas, **I Ali**, P Sindhvani, S Ahmad and O Algan, Comparison of intra-operative and post-operative dosimetric parameters for the urethra and prostate in patients undergoing low-dose-rate prostate brachytherapy. IJROBP, ASTRO Meeting, Atlanta, Georgia, 2013.
  45. RG Sindhvani, O Algan, S Thompson, A Mellis, P Sindhvani, S Ahmad and **I Ali\***, Quantitative Evaluation of Neurovasculr Bundle doses in Low-dose-rate Prostate Brachytherapy Using I-125 seeds. IJROBP, ASTRO Meeting, Atlanta, Georgia, 2013.
  46. **I Ali**, N Alsbou, O Algan, T Herman and S Ahmad, Quantitative Assessment by Measurement and Modeling of Mobile Target Elongation in Cone-Beam Computer Tomographic Imaging, Med. Phys. AAPM Meeting 2013, Indianapolis, Indiana, Med. Phys. AAPM Meeting 2013, Indianapolis, Indiana, **Oral Presentation** WE-G-134-9, Med Phys, 40: 514 (2013).
  47. **I Ali**, N Alsbou, O Algan, T Herman and S Ahmad, Theoretical Modeling of the Variations of CT Number Distributions for Mobile Targets in Cone-Beam Computed Tomographic Imaging, Med. Phys. AAPM Meeting 2013, Indianapolis, Indiana, Med. Phys. AAPM Meeting 2013, Indianapolis, Indiana, Poster Presentation SU-E-I-13, Med Phys, 40: 127 (2013).
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48. **I Ali**, O Algan, T Gunter, T Herman and S Ahmad, Evaluation of variations in gross tumor volume and tumor control probability during treatment using kV cone-beam CT in non-small cell lung carcinoma, Med. Phys. AAPM Meeting 2013, Indianapolis, Indiana, Med. Phys. AAPM Meeting 2013, Indianapolis, Indiana, Poster Presentation SU-E-J-193, Med Phys, 40: 195 (2013).
  49. S Hossain, O Algan, **I Ali**, J Young and S Ahmad, Comparisons of Single and Multiple Isocenter Stereotactic IMRT Treatment Planning for Multiple Brain Metastases Treatment, Med. Phys. AAPM Meeting 2013, Indianapolis, Indiana, Med. Phys. AAPM Meeting 2013, Indianapolis, Indiana, Poster Presentation SU-E-T-672, Med Phys, 40: 360 (2013).
  50. J Taguenang, T De La Fuente Herman, J Young, S Ahmad and **I Ali\***, Quantitative Evaluation of Dosimetric Accuracy of a Multiple-Diode-Array Detector (MapCHECK2) for High-Dose-Rate Ir-192 Brachytherapy, Med. Phys. AAPM Meeting 2013, Indianapolis, Indiana, Poster Presentation SU-E-T-113, Med Phys, 40: 229 (2013).
  51. J Taguenang, S Ahmad and **I Ali\***, Quantitative Measurement and Modeling of the Variations in Dose Distributions Induced by Cyclic Motion, Med. Phys. AAPM Meeting 2013, Indianapolis, Indiana, Med. Phys. AAPM Meeting 2013, Indianapolis, Indiana, Poster Presentation SU-E-T-391, Med Phys, 40: 294 (2013).
  52. O Algan, A Jamgade, **I Ali**, A Christie, J Thompson, D Thompson, S Ahmad, and T Herman, SU-E-J-204: The Dosimetric Impact of Daily Setup Error and Inter-Fraction Prostate Motion on the Calculated Treatment Plan for Patients Receiving IMRT Based Radiation Therapy, Med. Phys. 39: 3699 (2012).
  53. S Jackson, S Ahmad, and **I Ali\***, SU-E-J-133: Quantitative Measurement and Modeling of Target Volume Changes by Respiratory Motion in CT and Cone-Beam CT, Med. Phys. 39: 3683 (2012).
  54. S Oyewale, S Ahmad, and **I Ali\***, SU-E-T-85: Dose Rate and Energy Dependence of EBT, EBT2, EDR2 Films, and Mapcheck2 Diode Arrays in Beam Profiles from a Varian TrueBeam System, Med. Phys. 39: 3722 (2012).
  55. S Oyewale, S Ahmad, and **I Ali\***, SU-E-T-520: Quantitative Evaluation of Metal Artifacts in CT and Cone-Beam CT Images on the Accuracy of Dose Calculation, Med. Phys. 39: 3825 (2012).
  56. O Algan, S Oyewale, S Ahmad, and **I Ali\***, SU-E-J-02: Accuracy of Fiducial Marker Localization Using Axial and Helical CT, Cone-Beam CT and KV Imaging, Med. Phys. 39: 3652 (2012).
  57. H Jin, **I Ali**, V Keeling, and S Ahmad, SU-E-T-351: Investigation of Clinically Relevant Dose of Small Field Brain IMRT Using Planned Dose Perturbation, Med. Phys. 39: 3784 (2012).
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58. S Jackson, S Ahmad, and I Ali, SU-E-J-132: Quantitative Assessment of CT Number Variation Induced by Respiratory Motion Artifacts in CT and Cone-Beam CT, *Med. Phys.* 39: 3683 (2012).
  59. M. Confer, **I. Ali**, C. Matthiesen, S. Thompson, C. Bogardus, T. Herman, S. Ahmad, Following Thoracic SBRT, Does Early Chest Wall PET Avidity Correlate With Late Toxicity, poster presentation at the 53rd Annual Meeting of the American Society of Radiation Oncology. (ASTRO), Miami Beach, Florida, USA, October 02 – 06, 2011, Control # 1902, J-01 Lung
  60. **I. Ali**, S. Oyewale and S. Ahmad, Quantitative Assessment of Dose Differences Between CT and Cone-Beam CT Using Pencil Beam Convolution and Analytical Anisotropic Algorithms, Poster presentation at the 53rd Annual Meeting of the American Association of Physicists in Medicine (AAPM) and 2011 Joint AAPM/COMP meeting, Vancouver, B. C., Canada July 31- Aug 04, 2011, SU-E-Exhibit Hall- 64.
  61. **I. Ali**, O. Algan and S. Ahmad, Measurement and Modeling of the Gross Tumor Volume Shrinkage of Lung Tumors as a Function of Delivered Therapeutic Dose, Poster presentation at the 53rd Annual Meeting of the American Association of Physicists in Medicine (AAPM) and 2011 Joint AAPM/COMP meeting, Vancouver, B. C., Canada July 31- Aug 04, 2011, SU-E-Exhibit Hall-41.
  62. Y. Hu, S. Ahmad and **I. Ali\***, Evaluation of Optical Density Growth and Sensitivity of EBT1 and EBT2 Gafchromic Films on the Dosimetry for IMRT Quality Assurance, Poster presentation at the 53rd Annual Meeting of the American Association of Physicists in Medicine (AAPM) and 2011 Joint AAPM/COMP meeting, Vancouver, B. C., Canada July 31- Aug 04, 2011, SU-E-Exhibit Hall-186.
  63. **I. Ali**, M. Confer and S. Ahmad, Quantitative PET Imaging to Evaluate Clinical Complications Associated with Stereotactic Body Radiotherapy in Non Small Cell Lung Tumors, Poster presentation at the 53rd Annual Meeting of the American Association of Physicists in Medicine (AAPM) and 2011 Joint AAPM/COMP meeting, Vancouver, B. C., Canada July 31- Aug 04, 2011, SU-E-Exhibit Hall-90.
  64. Stephen Oyewale, Salahuddin Ahmad and **Imad Ali\***, Evaluations of the Dose Discrepancies Calculated on CT and Cone-Beam CT Using Pencil Beam Convolution and Analytical Anisotropic Algorithms, Yields of Positron-Emitting Nuclei (10C, 11C, Oral presentation (by AL) at the 28th Annual Meeting of the American College of Medical Physics (ACMP), Chattanooga, Tennessee, April 30 – May 3, 2011.
  65. S. Negusse, **I. Ali**, O. Algan, T. Herman and S. Ahmad, Evaluation of the Effects of Balloon Deformation and Position of the Source on Dosimetry of Mammosite Breast Brachytherapy, Poster presentation at the 52nd ASTRO annual meeting, San Diego, October 31st – November 4, 2010, Abstract 3097, *IJROBP* Vol. 78, No. 3, page S695.
  66. **I. Ali**, O. Algan, S. Thompson, T. Herman and S. Ahmad, Comparative Study of Dose Calculations Using the BrainLAB Pencil Beam and Monte Carlo Dose Algorithms, **Oral**
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**presentation** at the 52nd Annual Meeting of the American Association of Physicists in Medicine (AAPM), Philadelphia, Pennsylvania, July 18-22, 2010, MO-E- 204B-06, Medical Physics, Vol 37, No.6, June 2010, page 3360.

67. Jesse Tubbs, **Imad Ali**, Buu Du and Salahuddin Ahmad, Quantitative assessment of dose differences calculated using pencil beam on conventional CT and cone-beam CT from a kV on-board imager, Accepted for the Young Investigator Best Poster Competition in the 27th Annual Meeting of the American College of Medical Physics (ACMP), San Antonio, Texas, May 22 - 25, 2010.
  68. **Imad Ali**, Ozer Algan, Spencer Thompson, Puneet Sindhvani, Terence Herman and Salahuddin Ahmad, A Nomogram Model for the Enlarged Transient Prostate Volume Due to Edema in Brachytherapy Seed Implants, Presented in the poster session at the 31st Annual meeting of the American Brachytherapy Society, April 29- May 1, 2010, Brachytherapy, Volume 9, Supplement 1 (April-June 2010) pages S74- S75.
  69. Jesse Tubbs, **Imad Ali**, Buu Du and Salahuddin Ahmad, Dose differences calculated on conventional CT and cone-beam CT, **Oral presentation** by JT (awarded fourth prize) at the Young Investigators Symposium of the Southwest Chapter of the AAPM meeting, Baton Rouge, LA, March 5-6, 2010.
  70. **I. Ali**, J. Tubbs, K. Hibbitts, T. Langley, O. Algan, S. Thompson, T. Herman and S. Ahmad\*, Evaluation of setup accuracy of a stereotactic radiotherapy head immobilization mask using kV on- board imaging, Poster presentation at the 51<sup>st</sup> Annual American Association of Physicists (AAPM) meeting, Anaheim, California, July 26- 30, 2009, Session SU-FF-T-550, Medical Physics, Vol. 36, No. 6, June 2009, p 2651.
  71. **I. Ali**, C. Matthiesen, O. Algan, S. Thompson, C. Bogardus, T. Herman and S. Ahmad, Measurement of surface dose increase from patient immobilization thermoplastic masks using Gafchromic EBT films, Poster presentation at the 51<sup>st</sup> Annual American Association of Physicists (AAPM) meeting, Anaheim, California, July 26- 30, 2009, Session SU-FF-T-346, Medical Physics, Vol. 36, No. 6, June 2009, p 2601.
  72. F. Mckenna, **I. Ali** and S. Ahmad\*, Effects of Optical density instability of Gafchromic EBT film on IMRT dosimetry, Accepted for the Young Investigator Best Poster Competition in the 26th Annual Meeting of the American College of Medical Physics (ACMP), Virginia Beach, VA from May 2 - 5, 2009.
  73. **I. Ali** and S. Ahmad, Measurement and Correction of Sagging Shifts in kV Cone- Beam CT from an On-Board Imaging System, Accepted for poster presentation at the 50th Annual American Association of Physicists (AAPM) meeting, Houston, Texas, July 27- 31, 2008, Session Su-GG-I-22, Medical Physics, Volume 35, Number 6 (2008) p2627.
  74. **I. Ali** and S. Ahmad, A Technique for Removing Motion Related Image Artifacts in kV Cone-Beam CT from On-Board Imager: 4D-CBCT Implications, Accepted for poster presentation at
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the 50th Annual American Association of Physicists (AAPM) meeting, Houston, Texas, July 27- 31, 2008, Session SU-GG-I-17, Medical Physics, Volume 35, Number 6 (2008) p2646.

75. **I. Ali**, D. Lovelock, H. Kang, J. Yamada, E. York and H. Amols, Extraction of Internal and External Marker 3D-Motion in Liver Patients with Compression Belt Using kV Cone-Beam Radiographic Projections. *Med. Phys.* 34: 2392 (2007).
76. **I. Ali**, D. Lovelock, S. Krimishki, J. Chang and H. Amols, Correction of Couch Artifacts in kV Cone-Beam CT From An On-Board Imaging System, *Med. Phys.* 33: 2280 (2006).
77. D. Lovelock, T. LoSasso, **I. Ali**, H. Amols, C. Ling, Y. Yamada, H. Pham, and P Munro, Quantifying the Geometric Accuracy of the On Board Imager Over a One Year Period. *Med. Phys* 33: 2000 (2006).
78. **I. Ali**, D. Lovelock, T. LoSasso, and H. Amols. A Quality Assurance Procedure to Monitor Mechanical Stability and Image Quality of an On-Board Cone-Beam CT Imager, *Med. Phys.* 33: 2282 (2006).
79. **I Ali**, S Benedict, W Li, F Lerma, N Dogan and J Siebert, Multi-Leaf Collimator Quality Assurance Using the Electronic Portal Imaging, *Med. Phys.* 32: 2168 (2005).

## **VIII. Teaching Activities**

### **A. Didactic in Medical Physics for Medical Physics Graduate Students**

Department of Radiological Sciences, University of Oklahoma Health Sciences Center, Oklahoma City

- **RADI 5102** - Graduate core course (2 Credit hours) on **Radiation Protection and Shielding in Medical Installations** (Jan 2013- May 2013).
- **RADI-5824** - Graduate core course (4 Credit hours) on **Production and Absorption of Ionizing Radiation** (Aug 2011- Dec 2011; Aug 2009- Dec 2009).
- **RADI 6864** - Graduate Core Course (4 Credit hours) on **Radiological Physics I (Therapy)** (Jan 2010 – May 2010, Jan 2012 – May 2012).
- **RADI 6960** – Directive Reading for Advanced Topics.
- **Graduate Medical Physics Seminar**, Moderator for two-year/four-semesters over 2009-2010.

### **B. Medical Physics Training**

- Medical Physics Training for Radiation Oncology Physics Resident, University of Oklahoma Health Sciences Center (January 2009 – present).
- Medical and Clinical Physics Lectures for Radiation Oncology Residents, University of Oklahoma Health Sciences Center (July 2007 – present).
- Medical Physics Training for Radiation Oncology Physics Resident, Memorial-Sloan-Kettering Cancer Center (July 2005 – November 2007).
- Medical Physics Education/Training for Radiation Therapist, Memorial-Sloan-Kettering Cancer Center (July 2005 – November 2007).

### **C. Graduate Student Supervision and Defense Committees**

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Department of Radiological Sciences, University of Oklahoma Health Sciences Cent

- Giles Wright, Supervisor, 2016-2018, “Radiographic proton imaging using the MEVION-S250 radiation therapy system with Gafchromic films and computed radiography”.
- Justin Jaskowiak, Supervisor, 2014-2016. “Evaluation of the performance of different deformable image registration algorithms using mobile targets”.
- Michael Chaco, M.S., Supervisor, 2014-2015. “A dose calculation algorithm for diagnostic imaging beams by measurement and modeling”
- Jean-Michel Taguenang, M.S., Supervisor, 2012-2014. “Investigation of motion artifacts on distributions by measurement and modeling using 1D sinusoidal ...”
- Steven Jackson, M.S., Co-Supervisor, “Techniques for Multi-slice CT Radiation Profile Measurements ...”, 2012
- Stephen Oyewale, M.S., Supervisor, “Dose Rate and Energy Response of Radiographic and Gafchromic Films and the Evaluation of Dose Calculation Accuracy of Treatment Planning Algorithms ...” 2012 .
- Yong Chen, Ph.D., Committee Member, “Nuclear Interactions and Relative Biological Effectiveness in Proton Radiation Therapy”, 2010
- Jesse Tubbs, M.S., Supervisor, “Dose differences calculated on cone-beam CT and conventional CT: an investigative study for the validity of the CBCT-based adaptive radiation therapy” M.S. 2010.
- Frederick W. Mckenna, M.S., Co-Supervisor, “Studies of cell survival curve fitting, effective doses for radiobiological evaluation in SBRT treatment techniques and the dependence of density growth in Gafchromic film used in IMRT”, 2009

## IX. Professional Service

### A. Clinical Service

- Primary physicist for clinical coverage of stereotactic radiosurgery and radiotherapy procedures with external beam using linear accelerator.
  - Primary physicist for clinical coverage of prostate low-dose rate brachytherapy procedures with I-125 seeds.
  - Lead physicist on the acceptance and commissioning of the BrianLAB system used for stereotactic radiosurgery including: (a) hardware components such as small field dosimetry multi-leaf collimator on the TrueBeam Varian Linear accelerator, patient rigid immobilization and localization, ExacTrac Imaging and robotic couch, and (b) software components that include the treatment planning system IPLAN and image-guided radiation therapy with ExacTrac from BrainLAB.
  - Lead physicist on the acceptance and commissioning of prostate low-dose rate brachytherapy where we have accepted and commission hardware components that include the ultrasound imaging system from B-K Medical Systems, stepper localization system from Civco, seed calibration with well ionization chamber, brachytherapy hotlab log file maintenance and Variseed software from Varian Medical Systems.
  - Coverage of quality assurance procedures performed by senior physicist that include initial, weekly and end of treatment chart check and documentation.
  - Daily, monthly and annual quality assurance procedures for different machines including Varian 2100EX, Trilogy, Novalis Tx and Truebeam.
  - CT simulator and CBCT on-board imager daily, monthly and annual quality assurance.
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- IMRT quality assurance, small-field SRS/SRT/SBRT quality assurance, rapid arc quality assurance
- Treatment planning and chart checking, documentation and dose verification for conformal, IMRT, rapid arc, SRS/SRT/SBRT plans.
- Commissioning of software and hardware, quality assurance and regular daily task of treatment planning and dose delivery of HDR brachytherapy using the Nucletron system and Oncentra treatment planning.
- Commissioning of software and hardware, quality assurance, treatment planning and procedure performance of LDR brachytherapy particularly prostate implants with Variseed with I-125 and Pd-103 seeds.
- Acceptance and commissioning of different treatment planning systems: ECLIPSE-Varian and IPLAN-BrainLAB, ADAC Pinnacle.
- Acceptance and Commissioning of different machines including Varian 2100EX, Trilogy, Novalis Tx and Truebeam systems.

## **B. Committee Involvement**

At University of Oklahoma Health Science Center

- Chair of the **PhD Examination Committee** for Graduate Medical Physics Program at the Department of Radiological Sciences, (2012-present)
- Chair of the **Medical Physics Resident Examination Committee** for the Medical Physics Residency program at the Department of Radiation Oncology, (2008 – present).
- Member in the **PhD Advisory Committee** for Graduate Medical Physics Program at the Department of Radiological Sciences, (2008-present).
- Member in the **Selection Committee for Graduate Medical Physics Program** at the Department of Radiological Sciences, (2012-present).
- Member in the **Curriculum and the Rotations Committee** for the Medical Physics Residency program at the Department of Radiation Oncology, (2008 – present).
- Member in the **Selection Committee for the Medical Physics Residency** program at the Department of Radiation Oncology, (2010 – present).
- Coordinator, **Journal Club Seminar Series**, Department of Radiation Oncology, Jan 2010 – Dec 2010.
- Coordinator, **Graduate Medical Physics Seminar**, Department of Radiological Sciences, Jan 2008 – Dec 2009.

## **C. National and International Journal Peer-Review**

- Reviewer in the Medical Physics Journal, American Association of Physicists in Medicine.
- Reviewer in the Journal of Applied Medical Physics in Medicine, American College of Medical Physics
- Reviewer in the Journal of X-Ray Science and Technology, IOS Press.
- Reviewer in Medical Dosimetry, Journal of American Association of Medical Dosimetrists.
- Reviewer in the International Journal of Radiation Oncology Biology Physics, Journal of American Society for Radiation Oncology.
- Reviewer in the Radiotherapy and Oncology, Journal of European Society for Therapeutic Radiology and Oncology.

## **D. Mentorship**

- Mentor in the Sprint 2010 Inventors at Center for the Creation of Economic Wealth, University of Oklahoma Health Sciences Center.
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- Mentor for Summer undergraduate students to work on projects in radiation oncology with financial assistant (Summer 2009, 2010, 2011).

**X. Professional Membership**

- American Association of Physicists in Medicine (AAPM) (2001-present).
- American College of Medical Physics (ACMP) (2009-2011).
- American Society for Therapeutic Radiology and Oncology (ASTRO) (2009-present).

**XI. Professional Growth and Development**

- Attended IPLAN 4.5 Physics Course offered by BrainLAB, Chicago, 2012.
  - Attended training TrueBeam Physics Course offered by Varian Medical Systems, Las Vegas, 2011.
  - Attended IPLAN 4.0 Physics and Dosimetry Course offered by BrainLAB, Chicago, 2010.
  - Attended AAPM Summer School, Medical Imaging Using Ionization Radiation: Optimization of Dose and Image Quality, School University of California, San Diageo 2012.
  - Attended AAPM Annual Meeting in Philadelphia, Pennsylvania 2010.
  - Attended AAPM Annual Meeting in Houston, Texas 2008.
  - Attended AAPM Summer School, Molecular Imaging, Houston 2008.
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