

Shuang (Sean) Luan

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Professional Preparation

- Ph.D. Computer Science, University of Notre Dame, Notre Dame, Indiana, May 2004. Dissertation: Geometric Algorithms for Leaf Sequencing Problems in Intensity Modulated Radiation Therapy. Advised by Prof. Danny Z. Chen.
- M.S. Computer Science, University of Notre Dame, Notre Dame, Indiana, April 2002. Master Thesis: An Experimental Study and Comparison of Topological Peeling and Topological Walk. Advised by Prof. Danny Z. Chen.
- B.S. Computer Science and Engineering, Harbin Institute of Technology, Harbin, China, 1998.

Professional Experience

- July 2004 --- present: University of New Mexico, Albuquerque, New Mexico, 87131.
2018 --- present: Full Professor of Computer Science with a joint position in Radiology
2019 --- present: Associate Chair of Computer Science
2019 --- 2022 Director of Biomedical Engineering Graduate Program
2010 --- 2018 Associate Professor with a joint position in Radiology
2004 --- 2010 Assistant Professor with a joint position in Radiology
- Sept 2011 --- Oct 2011, Guest Scientist, University of Heidelberg Hospital Department for Radiation Oncology and Radiotherapy.
- June 2009 --- July 2009, Guest Scientist, DKFZ (German Cancer Research Center) Medical Physics Department, Heidelberg, Germany.
- July 2008 and August 2009, Visiting Assistant Professor, University of California San Francisco Radiation Oncology Department.
- May 2008 --- June 2008, Visiting Scientist, Siemens Oncology and Prowess Inc., Concord, CA.
- June 2007 --- July 2007, June 2006 --- July 2006, June 2005 --- July 2005: Visiting Professor, University of Maryland Radiation Oncology Department.

Academic Interests

- **Research:** computational geometry, optimization, biomedical engineering, medical informatics, radiation oncology and medical physics.

- **Teaching:** graduate and undergraduate algorithms, discrete mathematics, computational geometry, applied mathematics, numerical optimizations

Honors and Awards

- UNM STC Creative Award: 2024, 2023, 2022, 2021, 2020, 2019, 2018, 2017, 2015, 2014, 2012.
- UNM 2013 Faculty of Color Research Award.
- Laureate in the 2011 Computerworld Honors Program for Arc-modulated Radiation Therapy.
- Qforma Endowed Lecturer. 2009-2010.
- Center for Applied Mathematics (CAM) Fellow, University of Notre Dame, August 2002 --- May 2003.

Funding

- NIH NCI 1R21CA197325-01, “An LET Dosimeter”. Sept 1, 2015 – Aug 31, 2018. \$319,817. Role: PI, with co-PI Michael Holzscheiter.
- Amazon Web Service in Education Research Grant: \$7,500 for using Amazon Elastic Cloud Service. July 1, 2011 – June 30, 2012.
- Amazon Web Service in Education Research Grant: \$3,500 for using Amazon Elastic Cloud Service. June 1, 2010 – May 31, 2011.
- NSF CBET-0853157: "Computer-Aided Treatment Planning for Antiproton Therapy", \$375,000, Aug 1, 2009 - July 31, 2012, Primary PI, with co-PI Michael Holzscheiter.
- New Mexico Consortium, 1109, “3D Image Reconstruction with Minimum Radiation Exposure and its Applications to Interventional Radiology”, \$10,267, Feb, 2009 – Sept 2009, Role PI, with co-PIs: Rick Chartrand, Los Alamos National Laboratory and Phil Heintz, UNM Radiology.
- NSF CBET-0755054, "Computer-Aided Dynamic Gamma Knife Radiosurgery Treatment Planning", \$291,915, Feb 15, 2008 - Jan 31, 2011, Single PI.
- NIH NCI R01CA117997, “4 Dimensional IMAT Planning using Graph Algorithms”. June 1, 2007 - April 30, 2011. The UNM portion is \$313,035.

Issued Patents

- US Patent 7,283,611 B1: Segmentation Algorithmic Approach to Step and-Shoot Intensity Modulated Radiation Therapy.
- US Patent: 7,466,797: Error control in Algorithmic Approach to Step-and-Shoot Intensity Modulated Radiation Therapy.
- US Patent 8,014,494, USRE695361: Single Arc Dose Painting for Precision Radiation Therapy.
 - Commercially licensed.

- US Patents 8,654,923, 9,630,023 B2: System and Methods for using a Dynamic Scheme for Radiosurgery.
 - Commercially licensed.
- US Patents 8,835,877, 9,387,348, 9,561,389, and 9,827,446 B: System and Methods for Photon based Radiotherapy and Radiosurgery Delivery.
 - Commercially licensed.
- US Patent 9,805,170: System and Methods for Performing Medical Physics Calculation.
 - Commercially licensed.
- U.S. Patent 9,844,684: Optimization methods for radiation therapy planning.
- US Patent 10,089,660: Online Review Assessment Using Multiple Sources
- US Patent 11,559,703: Technologies for Energy Modulated Radiation Therapy.
- US Patent 11,679,277 Adjustable Multi-slit Collimator

Supervision of Ph.D. Students:

- Nathan Swanson, PhD with distinction, March 2009. Dissertation Title: Computer Assisted Dynamic Radiosurgery Treatment Planning. Nate is the winner of the 2008 Student Award for Innovation in Informatics. Nate is now a Senior Geospatial Scientist with GeoEye Inc., doing research on satellite images. GeoEye is the world's largest space imaging corporation and provides satellite maps images to companies such as Microsoft, Yahoo and Google.
- Roy Keys, PhD in Physics, November 2011. (co-Advisor with Prof. Michael Holzscheiter, UNM Physics Department). Dissertation Title: Charged Hadron Beam Therapy: Fast Computational Physics Methods. Roy is now a medical physicist at the New Mexico Cancer Center.
- Gonzalo Cabal, PhD in Medical Physics, 2012. (co-Advisor with Prof. Oliver Jakel, German Cancer Research Center (DKFZ)). Gonzalo is currently an Assistant Professor at Ludwig Maximilian University of Munich.
- Daniel Riofrio, PhD in Computer Science, April 2015. Dissertation Title: New Optimization Technique for Radiation Therapy Planning. Daniel came to US as a Fulbright Scholar from Ecuador and returned to his home and is now with Universidad San Francisco de Quito
- Shaun Bloom, PhD in Computer Science, December 2015. Dissertation Title: Geometric Algorithms and Data Structures for Simulating Diffusion Limited Reactions. Shaun is now senior scientist with Stellar Science, a computer software company providing leading-edge scientific software.
- Viktor Chekh, PhD in Computer Science, August 2016, Dissertation Title: Computer Aided Quantitative Diagnosis of Diabetic Foot. Viktor is now with Blackmagic Design, a digital cinema company and manufacturer.
- Stephen Bello, PhD in Physics, November 2017. (co-Advisor with Prof. Michael Holzscheiter, UNM Physics Department). Dissertation topic: Real-time Monitoring for LET of Hadron Beams.

Publications

Journal Articles (in reverse chronological order):

- [J1] Tegami S, Bello SD, **Luan S**, Mairani A, Parodi K, Holzscheiter M. LET Monitoring using Liquid Ionization Chambers. *International Journal of Medical Physics, Clinical Engineering and Radiation Oncology*. 2017 6(2).
- [J2] Karamitrosa M, **Luan S**, Bernald M, Allisone J, Baldacchinof G, Davidkovah M, Francisi Z, W. Friedlandj, V. Ivantchenkok,e, A. Ivantchenkoe, A. Manterol, P. Nieminemm, G. Santinm, H. N. Trann, V. Stepana,h, S. Incerti. “Diffusion-controlled reactions modelling in Geant4-DNA”, *Journal of Computational Physics*, 274, 841–882 (2014).
- [J3] Biedl T, Durocher S, Hoos H, **Luan S**, Saia J, Young M. A Note on Improving the Performance of Approximation Algorithms for Radiation Therapy. *Information Processing Letters*, 2011, (111)7, 326-333.
- [J4] Bansal N, Chen D, Hu X, **Luan S**, Misiolek E, Schieber B, Wang C. Shape Rectangularization Problems in Intensity-Modulated Radiation Therapy. *Algoirthmica*, 2011, 60(2), pages 421-450.
- [J5] Chen D, **Luan S**, Wang C. Coupled Path Planning, Region Optimization, and Applications to Intensity-Modulated Radiation Therapy. *Algorithmica*, 2011, 60(1), pages 152-174.
- [J6] Tang G, Earl M, **Luan S**, Wang C, Naqvi S, Mohiuddin M, and Yu C. Comparing Radiation Treatments Using Intensity-Modulated Beams, Multiple Arcs and Single Arc. *International Journal of Radiation Oncology, Biology, Physics*, 2010, 76 (5), pages 1554-1562.
- [J7] Keyes R, Romano C, Arnold D, **Luan S**. Radiation Therapy Calculations using an On-demand Virtual Cluster via Cloud Computing. arXiv:1009.5282.
- [J8] **Luan S**, Swanson N, and Ma L. Dynamic Gamma Knife Radiosurgery, *Physics in Medicine and Biology*, 54 (2009), 1579-1591.
- [J9] Wang C, **Luan S**, Tang G, Chen D, Earl M, Yu C. Arc-modulated Radiation Therapy (AMRT): a single-arc form of Intensity-Modulated Arc Therapy. *Physics in Medicine and Biology*. Vol 53, No. 22, Nov. 2008, pages 6291-6304. Runner up of the Roberts Prize, *Physics in Medicine and Biology Paper of the Year Award*.
- [J10] Tang G, Earl M, **Luan S**, Wang C, Cao D, Yu C, and Naqvi S. Stochastic vs. deterministic kernel based superposition approaches for dose calculation of intensity-modulated arcs. *Physics in Medicine and Biology*, 53 (2008), 4733-4746.
- [J11] Chen D, Hu X, **Luan S**, Wang C, and Wu X. Mountain Reduction, Block Matching, and Medical Applications, *International Journal of Computational Geometry and Applications (IJCGA)*, Vol. 18, Nos. 1-2 (April 2008), 63-106.
- [J12] **Luan S**, Wang C, Cao D, Chen D, Shepard D, and Yu C. Leaf-sequencing for intensity-modulated arc therapy using graph algorithms, *Medical Physics*, Vol 35, No. 1, 2008, 61-69.
- [J13] **Luan S**, Saia J, and Young M. Approximation algorithms for minimizing segments in radiation therapy. *Information Professing Letters*, Vol. 101, 2007, 239-244.
- [J14] Yu C, Shepard D, Earl M, Cao D, **Luan S**, Wang C, and Chen D. New Developments in Intensity Modulated Radiation Therapy. *Technology in Cancer Research and Treatment*, 2006, 451-564.
- [J15] **Luan S**, C. Wang, Chen D, Hu X, Naqvi S, Wu X, and Yu C. An improved MLC segmentation algorithm and software for step-and-shoot IMRT delivery without tongue-and-groove error. *Medical Physics*, Vol 33, No. 5, 2006 pages 1199-1212.

- [J16] Cao D, Earl M, **Luan S**, and Shepard D. Continuous Intensity Map Optimization (CIMO): A Novel Approach to Leaf Sequencing in Step and Shoot IMRT. *Medical Physics*, Vol 33, No. 4, 2006, pages 859-867.
- [J17] Chen D, Hu X, **Luan S**, Naqvi S, Wang C, and Yu C. Generalized Geometric Approaches for Leaf Sequencing Problems in Radiation Therapy. *International Journal of Computational Geometry and Applications (IJCGA)*, Vol. 16, No 2-3, June 2006. 175-204.
- [J18] Chen D, Hu X, **Luan S**, Wu X, and Yu C. Optimal Terrain Construction Problems and its application in intensity modulated radiation therapy. *Algorithmica*, Vol. 42, No. 3-4, June 2005, pp. 265-288.
- [J19] Chen D, Hu X, **Luan S**, Wang C, and Wu X. Geometric Algorithms for Static Leaf Sequencing Problems in Radiation Therapy. *International Journal of Computational Geometry and Applications (IJCGA)*, Vol. 14, October 2004, pp. 311-339.
- [J20] **Luan S**, Wang C, Chen D, Hu X, Naqvi S, Lee C, and Yu C. A new MLC segmentation algorithm/software for step-and-shoot IMRT delivery. *Medical Physics*, Vol. 31, No. 4, April 2004, page 695-707.
- [J21] **Luan S**, Chen D, Zhang L, Wu X, and Yu C. An Optimal Algorithm for Computing Configuration Options of One-dimensional Intensity Modulated Beams. *Physics in Medicine and Biology*, Vol. 48, No. 15, August 2003, page 2321-2338.
- [J22] Chen D, **Luan S**, and Xu J. Topological peeling and applications. *International Journal of Computational Geometry and Applications (IJCGA)*, Vol. 13, No. 2, April 2003, page 135-172.

Full Conference Articles (in reverse chronological order):

- [C1] Maryam Albuainin, Richard Shaw, and Shuang Luan. Reducing the data for radiation cancer therapy quality Assurance. ICIBM'23 (International Conference on Intelligent Biology and Medicine), St. Pete Beach, FL.
- [C2] Chekh V, Soliz P, Burge M, and **Luan S**. A Physiological Thermal Regulation Model with Application to the Diagnosis of Diabetic Peripheral Neuropathy. In *Proceedings of ACM BCB, Boston, Massachusetts, USA, August 2017*. DOI: 10.1145/3107411.3107512
- [C3] Riofrio D, Zhou J, Ma L, **Luan S**. Particle Swarm Optimization for Radiation Therapy Planning. *ACM Conference on Bioinformatics, Computational Biology, Biomedical Informatics (ACM BCB 2015)*.
- [C4] G. Iven, V. Chekh, **S. Luan**, A. Mueen, P. Soliz, W. Xu, M. Burge, Non-contact Sensation Screening of Diabetic Foot Using Low Cost Infrared Sensors, 27th International Symposium on Computer-based Medical Systems (CBMS), 2014.
- [C5] Bloom S, **Luan S**, Karamitros M, and Incerti S. Geometric Algorithms for Simulating Diffusion-Limited Reactions. *Symposium of the Theory of Modeling and Simulations (TMS'14)*.
- [C6] Chekh V, Soliz P, **Luan S**, McGrew E, Barriga S, Burge M, and Luan S. Computer Aided Diagnosis of Diabetic Peripheral Neuropathy. *SPIE Medical Imaging 2014*.
- [C7] Chekh V, **Luan S**, Burge M, Carranza C, Soliz P, Barriga S, and McGrew E. Quantitative Early Detection of Diabetic Foot. *ACM Conference on Bioinformatics, Computational Biology, Biomedical Informatics (ACM BCB 2013)*.
- [C8] Potluru, V, Plis, S, **Luan S**, Calhoun V, Hayes T. (2011). Sparseness and a reduction from Totally Nonnegative Least Squares to SVM. Proceedings of the International Joint Conference on Neural Networks. 1922 - 1929. 10.1109/IJCNN.2011.6033459.

- [C9] Mu J, Liu X, Heintz P, **Luan S**, Mlady G, and Chen D. Segmentation of Knee Joints in X-ray Images Using Decomposition-based Sweeping and Graph Search. *SPIE Medical Imaging*, 2011.
- [C10] Chen D, **Luan S**, and Wang C. Coupled Path Planning, Region Optimization, and Applications in Intensity-Modulated Radiation Therapy. *Proceedings of the 16th Annual European Symposium on Algorithms (ESA 2008)*.
- [C11] Chen D, Hu X, **Luan S**, Misiolek E, and Wang C. Shape Rectangularization Problems in Intensity-Modulated Radiation Therapy. *17th International Symposium on Algorithms and Computation (ISAAC'06)*.
- [C12] **Luan S**, Wang C, Chen D, and Hu X. Leaf Sequencing Software for Intensity-Modulated Radiation Therapy. *the 19th IEEE Symposium on Computer Based Software Systems*, 2006.
- [C13] Chen D, Hu X, **Luan S**, Wang C, and Wu X. Mountain Reduction, Block Matching, and Applications in Intensity-Modulated Radiation Therapy. *Proc. 21st ACM Symp. on Computational Geometry (SoCG'05)*, pp. 35-44.
- [C14] Chen D, Hu X, **Luan S**, Naqvi S, Wang C, and Yu C. Generalized Geometric Approaches for Leaf Sequencing Problems in Radiation Therapy. *15th International Symposium on Algorithms and Computation (ISAAC 2004)*, December 2004.
- [C15] Chen D, Hu X, **Luan S**, Wang C, and Wu X. Geometric Algorithms for Static Leaf Sequencing Problems in Radiation Therapy. *Proc. of 19th ACM Symposium on Computational Geometry (SoCG03)*, San Diego, CA, June 2003, page 88-97.
- [C16] Chen D, Hu X, **Luan S**, Wu X, and Yu C. Optimal Terrain Construction Problems and Applications in Intensity-Modulated Radiation Therapy. *Lecture Notes in Computer Science*, Vol.~2461, Springer Verlag, *Proc. of the Tenth Annual European Symposium on Algorithms (ESA)*, Rome, Italy, September 2002, page 270-283.
- [C17] Chen D, **Luan S**, and Xu J. An Experimental Study and Comparison of Topological Peeling and Topological Walk. *Lecture Notes in Computer Science*, Vol. 2387, Springer Verlag, *Proc. of the Eighth Annual International Computing and Combinatorics Conference (COCOON)*, Singapore, August 2002, page 456-466.
- [C18] Chen D, Luan S, and Xu J. Topological peeling and implementation, in Springer-Verlag, *Lecture Notes in Computer Science*. Vol. 2223, *Proc. 12th International Symposium on Algorithms and Computations (ISAAC)*, page 454-466, 2001.

Refereed Medical Conference Abstracts (in reverse chronological order):

- [A1] Shaw R, **Luan S**, and Albuainin M. Quality of Data Required to Commission TPS. AAPM 2022 (the 64th Annual Meeting and Exhibitions of American Association of Physicists in Medicine), Washington, DC, July 2022.
- [A2] Shaw R. **Luan S**. Limitations of Arc-Based Deliveries to Generate Sharper Dose Gradients Will Require Energy Modulated Arc Radiotherapy (EMAT). *The 61st Annual Meeting of the American Association of Physicists in Medicine (AAPM)*, 2019. Oral presentation.
- [A3] Ma L, Chui J, **Luan S**. Dose Sharpening Via Packing and Optimizing Hundreds of Isocenters for Intracranial Radiosurgery of Large Brain Lesions. *The 61st Annual Meeting of the American Association of Physicists in Medicine (AAPM)*, 2019. Oral presentation.
- [A4] Shaw R. **Luan S**. Advance Energy Modulated Arc Therapy (EMAT) with Penumbra Modulation Requires a Novel Multi-Slit Collimation. *The 61st Annual Meeting of the American Association of Physicists in Medicine (AAPM)*, 2019. Oral presentation.

- [A5] Shaw R, **Luan S**. Energy Modulated Radiation Therapy (EMRT), a New Paradigm in Radiotherapy. *The 60th Annual Meeting of American Association of Physicists in Medicine (AAPM)*, 2018. Oral Presentation.
- [A6] Bello S, **Luan S**, Holzscheiter M. A method for measuring LET of hadron beams. *The 60th Annual Meeting of American Association of Physicists in Medicine (AAPM)*, 2018. Oral Presentation.
- [A7] Ma L, Chiu J, **Luan S**, Sahgal A. Clinical Realization of Rapid Dose Sculpting for Image-Guided Stereotactic Radiosurgery. CARS (Computer Assisted Radiology and Surgery) Congress 2017.
- [A8] Riofrio D, Zhou J, **Luan S**. Optimizing the Number of Catheter Implants and Their Tracks for Prostate HDR Brachytherapy. *The 57th Annual Meeting of American Association of Physicists in Medicine (AAPM)*, 2015. Oral Presentation.
- [A9] Riofrio D, **Luan S**, Zhou J, Ma L. Inverse Planning of Gamma Knife Radiosurgery Using Natural Physical Models. *The 56th Annual Meeting of American Association of Physicists in Medicine (AAPM)*, 2014. Oral Presentation.
- [A10] Chekh V, Soliz P, Barriga S, McGrew E, Kanagy N, **Luan S**. Novel model of thermoregulation based on control theory used to evaluate peripheral microvascular function. *Experimental Biology* 2013.
- [A11] Keyes R, Maes D, **Luan S**. Fast estimation of secondary particle therapy dose using a modified track repeating method. *The 54th Annual Meeting of American Association of Physicists in Medicine (AAPM)*, 2012. Short Oral Presentation.
- [A12] Riofrio D, Sellner S, Cabal G, Keyes R, Holzscheiter M, Jakel O, **Luan S**. Impact of variable beam spot size on treatment time in particle therapy. *The 54th Annual Meeting of American Association of Physicists in Medicine (AAPM)*, 2012.
- [A13] Zamora G, Chekh V, Burge M, Barriga E, **Luan S**, Heintz P, Edwards A, McGrew E, Soliz P. Optical Measurements of Microvascular Circulatory Function in the Foot for Detection of Peripheral Neuropathy. Photonics West, BIOS, San Francisco, CA, January 2012.
- [A14] Burge M, Zamora G, Barriga E, Chekh V, **Luan S**, Heintz P, Edwards A, McGrew E and Soliz P. Thermal Functional Imaging for Screening of Peripheral Neuropathy in the Diabetic Foot. American Diabetes Association, 72nd Scientific Session, Philadelphia, PA, June 8-12, 2012.
- [A15] Riofrio D, Keyes R, Maes D, **Luan S**. Simultaneous Optimization of Dose and LET in Proton Therapy Using Voronoi Partitions. *The 53rd Annual Meeting of American Association of Physicists in Medicine (AAPM)*, 2011, oral presentation.
- [A16] Keyes R, Arnold D, Raynaud A, **Luan S**. McCloud: Toward 10 Million Monte Carlo Primaries in 5 Minutes for Clinical Use. *The 53rd Annual Meeting of American Association of Physicists in Medicine (AAPM)*, 2011.
- [A17] Ma L, Hu W, **Luan S**. An Investigation of Kernel-Based Dynamic Dose Painting Treatment Approach. *The 53rd Annual Meeting of American Association of Physicists in Medicine (AAPM)*, 2011.
- [A18] Chen Z, **Luan S**, Riofrio D, Ma L. A study on the focusing power of dynamic photon painting. *The 52nd Annual Meeting of American Association of Physicists in Medicine (AAPM)*, 2010. (John R. Cameron Young Investigator Competition Finalist, 12 out of 198 submissions.)
- [A19] Keyes R, Romano C, Arnold D, **Luan S**. Medical physics calculation in the cloud, a new paradigm for clinical computing. *The 52nd Annual Meeting of American Association of Physicists in Medicine (AAPM)*, 2010.

- [A20] Riofrio D, Cabal G, Keyes R, Holzscheiter M, DeMarco J, Jäkel O, **Luan S**. Minimizing energy change in particle therapy using Voronoi partitions. *The 52nd Annual Meeting of American Association of Physicists in Medicine (AAPM)*, 2010.
- [A21] Gabal G, **Luan S**, Jäkel O. A beam angle selection algorithm for particle therapy. *The 52nd Annual Meeting of American Association of Physicists in Medicine (AAPM)*, 2010.
- [A22] Keyes R, Romano C, Arnold D, **Luan S**. Cloud computing as a Monte Carlo cluster for radiation therapy. *The XVth International Conference on the Use of Computers in Radiation Therapy (ICCR)*, 2010.
- [A23] Cabal G, **Luan S**, Jäkel O. An algorithm for optimizing beam angle configuration in particle therapy. *Particle Therapy Cooperative Group (PTCOG) 2009*.
- [A24] Cabal G, **Luan S**, Jäkel O. Impact of the beam angle configuration on the quality and the robustness of a particle therapy plan. *Particle Therapy Cooperative Group (PTCOG) 2009*.
- [A25] Trestrail L, Sanchez D, Sandoval D, Heintz P, **Luan S**, Chen D. A Web-based Automated QA Analysis Program for Digital Image Tracking. *The Radiological Society of North America (RSNA) 95th Scientific Assembly and Annual Meeting*, 2009, oral presentation.
- [A26] Riofrio D, Keyes R, Hecht A, **Luan S**, Holzscheiter M, DeMarco J, Fahimian B. Planning Dynamic Particle Therapy *The 51st Annual Meeting of American Association of Physicists in Medicine (AAPM)*, 2009.
- [A27] Cao D, Rao M, Chen F, Ye J, **Luan S**, Shepard D. A novel approach to machine specific QA for volumetric modulated arc therapy. *The 51st Annual Meeting of American Association of Physicists in Medicine (AAPM)*, 2009.
- [A28] Chen F, Rao M, Ye J, **Luan S**, Shepard D, Cao D. Study of systemic and random errors on VMAT and IMRT plan quality and deliver accuracy. *The 51st Annual Meeting of American Association of Physicists in Medicine (AAPM)*, 2009. oral presentation.
- [A29] Keyes RW, **Luan S**, Holzscheiter M. Antiproton Therapy: A simplified method to characterize and compare dose from peripheral radiation fields. *The 51st Annual Meeting of American Association of Physicists in Medicine (AAPM)*, 2009.
- [A30] Fahimian BP, DeMarco JJ, Keyes RW, **Luan S**, Zankl M, Holzscheiter M. Antiproton Radiotherapy: Development of Physically and Biologically Optimized Monte Carlo Treatment Planning Systems for Intensity and Energy Modulated Delivery. *The 51st Annual Meeting of American Association of Physicists in Medicine (AAPM)*, 2009, oral presentation.
- [A31] **Luan S**, Swanson N, Chen Z, and Ma L. Treatment Planning for Dynamic Gamma Knife Radiosurgery. *The 9th Bi-Annual Congress of International Society of Stereotactic Radiosurgery (ISRS'2009)*, oral presentation.
- [A32] Wang C, **Luan S**, Chen D, Tang G, and Yu C. Dynamic leaf sequencing with monitor unit control, *the 50th Annual Meeting of American Association of Physicists in Medicine (AAPM)*, 2008.
- [A33] Wang C, **Luan S**, Tang G, Earl M, Chen D, and Yu C. Arc modulated radiation therapy, a novel method for rotational radiation therapy, *the 50th Annual Meeting of American Association of Physicists in Medicine (AAPM)*, 2008.
- [A34] Tang G, Earl M, **Luan S**, Wang C, Chen D, and Yu C. Is dose variation crucial for single-arc radiation therapy delivery, *the 50th Annual Meeting of American Association of Physicists in Medicine (AAPM)*, 2008, oral presentation.
- [A35] Tang G, Earl M, **Luan S**, Wang C, Chen D, Naqvi S, and Yu C. Comparison of intensity-modulated radiation therapy, intensity-modulated arc therapy, and arc modulated radiation

- therapy, *the 50th Annual Meeting of American Association of Physicists in Medicine (AAPM)*, 2008.
- [A36] **Luan S**, Swanson N, Ma L, and Li K, Dynamic Gamma Knife Radiosurgery, *the 8th Bi-Annual Congress of International Society of Stereotactic Radiosurgery (ISRS'2007)*, oral presentation.
- [A37] Wilkins P, **Luan S**, Swanson N, Heintz P, and Ketai L. A New Algorithm/Software for CT Measurement of Airway Wall Volume. *The Radiological Society of North America (RSNA) 92nd Scientific Assembly and Annual Meeting*, 2006.
- [A38] **Luan S**, Wang C, Cao D, Chen D, D'Souza W, and Yu C. Patient Breathing Motion Synchronized IMAT: A New Technique for Compensating Intra Fraction Organ Motions. *The 48th Annual Meeting of American Association of Physicists in Medicine (AAPM)*, 2006.
- [A39] Cao D, Earl M, **Luan S**, and Shepard D. Continuous Intensity Map Optimization (CIMO): A Novel Leaf Sequencing Algorithm. *48th Annual Meeting of American Association of Physicists in Medicine (AAPM)*, 2006, oral presentation.
- [A40] **Luan S**, Heintz P, Sorensen S, Jimenez A, Chen D, Roedersheimer K, and Wong G. The Effect of Collimator Rotation on IMRT Treatment Planning. *The 47th Annual Meeting of American Society of Therapeutic Radiology and Oncology (ASTRO)*, 2005.
- [A41] Roedersheimer K, Chen D, **Luan S**, and Xing L. The Impact of Multileaf Collimator Rotation in IMRT Planning. *The 47th Annual Meeting of the American Association of Physicists in Medicine (AAPM)*, 2005.
- [A42] Wang C, **Luan S**, Chen D, Hu X, and Yu C. A Generalized MLC Segmentation Algorithm for Step-and-Shoot IMRT with no Tongue-and-Groove Error. *The 47th Annual Meeting of American Association of Physicists in Medicine (AAPM)*, 2005, oral presentation.
- [A43] **Luan S**, Wang C, Chen D, Hu X, Naqvi S, and Yu C. A New MLC Segmentation Algorithm for Step and Shoot IMRT Without Tongue-and-Groove Error. *Forty-Sixth Annual Meeting and Technical Exhibition of the American Association of Physicists in Medicine (AAPM)*, 2004, oral presentation.
- [A44] **Luan S**, Wang C, Chen D, Hu X, and Yu C. A Study of the Impact of MLC Constraints on the Number of Segments in Step-and-Shoot IMRT Delivery. *Forty-Sixth Annual Meeting and Technical Exhibition of the American Association of Physicists in Medicine (AAPM)*, 2004, oral presentation.
- [A45] **Luan S**, Wang C, Naqvi S, Chen D, Hu X, Lee C, and Yu C. A New Leaf Sequencing Algorithm/Software for Step and Shoot IMRT. *Forty-Fifth Annual Meeting and Technical Exhibition of the American Association of Physicists in Medicine (AAPM)*, 2003, oral presentation.
- [A46] Wu X, Chen D, Hu X, **Luan S**, Zhang L, and Yu C. A new leaf-sequencing algorithm for intensity-modulated arc therapy. *Forty-Third Annual Meeting and Technical Exhibition of the American Association of Physicists in Medicine (AAPM)*, 2001, oral presentation.