

Curriculum Vitae

Jiajin (James) Fan, Ph. D.

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Education

Sept. 2000 – July 2004: Tsinghua University, Ph. D. in Medical Physics and Health Physics

Sept. 1996 – July 2000: Tsinghua University, B. S. in Engineering Physics

Work Experience

June 2007 – Present: Fox Chase Cancer Center, Assistant Professor (Associate Member)

Aug. 2004 – June 2007: Fox Chase Cancer Center, Research Associate

Expertise

- ▲ Monte Carlo particle transport theory and applications
- ▲ Radiation therapy dose calculation, plan optimization and quality assurance
- ▲ Proton radiotherapy
- ▲ Cone beam CT image denoising
- ▲ Linac source modeling and beam reconstruction
- ▲ Radiation dosimetry, IMRT planning, machine commissioning and shielding system design

Memberships

- ▲ The American Association of Physicist in Medicine (AAPM)
 - Full 2006 – Present
 - Junior 2005 – 2006
- ▲ AAPM -- Delaware Valley Chapter 2004 – Present

Research Experience

At Fox Chase Cancer Center

- Aug. 2007 – Present: **Image Guided Radiation Therapy (IGRT)**
Investigating Monte Carlo based noise reduction technique for Cone Beam Computer Tomography
IGRT for Stereotactic Body Radiation Therapy (SBRT)
- Jun. 2006 – Present: **Ultra fast Monte Carlo dose calculation engine** for the CyberKnife radiosurgery system
Developed the dose calculation engine with advanced speed-up technique including photon interaction forcing, Russian roulette, electron range/region rejection, and correlated sampling (electron track repeating) (2006-2007)
Beam modeling for the cutting-edge CyberKnife IRIS Hexagon Variable Aperture Collimator (2008)
- Aug. 2004 – Present: Investigation of **beam delivery, dose calculation, plan optimization and shielding for proton therapy**
Developed an aperture-based beam delivery technique for Intensity Modulated Proton Therapy (IMPT) using laser-accelerated proton beams (2005-2006)
Developed a Fluka-based planning system for IMPT which includes initial dose calculation, plan optimization and final dose verification (2006)
Shielding system design for the laser-proton experimental device and the clinical treatment facility at Fox Chase (2006-2007)
3D patient dose reconstruction using positron-emission tomographic images after proton therapy (2006-2008)
- Dec. 2005 – July 2007 **Source modeling and phase space reconstruction**
Developed a unique source modeling and beam reconstruction method for the CyberKnife system (2006-2007)

Developed a generic measurement-based source modeling technique which can be used to all the clinical linear accelerators (2005-2006)

Aug. 2004 – May 2006: **Fast Monte Carlo-based MU checks for Intensity Modulated Radiation Therapy (IMRT) quality assurance**

Developed an innovative fast Monte Carlo-based IMRT/3DCRT MU check code for quality assurance utilizing MLC log files and R/V outputs

At Tsinghua University:

Dec. 2000- June 2004: Research on **Monte Carlo variance reduction techniques**

Developed an adaptive importance sampling method -- POST Monte Carlo method which can improve the calculation efficiency by 3~4 magnitudes for deep penetration problems comparing to the widely used regional importance/weight window method

Developed an exponential importance method which solved the point detector unbounded variance in MC simulation

Developed a new pseudorandom number generator which achieves extremely long period without increasing computing time

May 2001- June 2004: Research on **internal exposure dose from nuclear medicine radiotherapy**

Constructed a new Chinese mathematical phantom based on the statistical analysis of the Chinese Reference Man data

Calculated S-Values for all the organs inside the mathematical phantom using the Monte Carlo method

Developed software for patient internal exposure dose calculation for clinical applications

Mar 2001- Jun 2003: Developed an EGS4 graphic user interface named EGSWin with VC++6.0

Sep. 2001- Dec. 2001: Participated the shielding design for large object x-ray inspection systems (TH_SCAN) and large industry CT systems

Clinical Experience

Radiation therapy

- ▲ Stereotactic radiotherapy and quality assurance (XKnife, FastPlan)
- ▲ IMRT treatment planning (CORVUS, XiO, Eclipse)
- ▲ External beam treatment planning (AcQPlan, XiO)
- ▲ Chart checking procedures (MU calculation)
- ▲ IMRT QA procedures (film, ion chamber measurement)
- ▲ Radiation therapy simulation and patient setup (CT, MRI, Ultrasound)
- ▲ Radiation dosimeters (ionization chambers, diodes, TLDs, film)

Special procedures

- ▲ Stereotactic Radiation Surgery (Radionics, FastPlan)
- ▲ Brachytherapy planning and dosimetry (HDR/LDR/Seed Implant)
- ▲ Total body irradiation
- ▲ In vivo dosimetry

Others

- ▲ Linac commissioning/acceptance testing (21EX, Trilogy, iX)
- ▲ Monthly/annual machine QA procedures (21EX, Trilogy, Primus, Primart)
- ▲ RTP commissioning/acceptance testing (FastPlan, Eclipse)
- ▲ Radiation shielding design and protection survey
- ▲ EBT film calibration and data processing
- ▲ Protocols review

Teaching Experience

Apr. 2005 – Apr. 2008	Fox Chase Cancer Center, instructor, Monte Carlo short course
Apr. 2005	Fox Chase Cancer Center, instructor, IMRT short course
Spring semester 2004	Tsinghua University, Teaching assistant, Medical Physics
Summer semester 2003	Tsinghua University, instructor, Natural Radiation Distribution Survey
Feb. 2003 – July 2003	Co-supervisor of undergraduate student graduation project
Summer semester 2002	Tsinghua University, Teaching assistant, Medical Physics
Summer semester 2001	Tsinghua University, Teaching assistant, Medical Physics
Sept. 2000 – June 2002	Tsinghua University, Teaching assistant, Health Physics

Awards and scholarships

- ▲ 2005 Young Investigator Award, DVCAAPM
- ▲ 2004 Award for Excellence Dissertation, Tsinghua University
- ▲ 2004 Award for Excellence Graduate Student, Tsinghua University
- ▲ 2004 Young Investigator Award, Tsinghua University
- ▲ 2003 – 2004 GE Scholarship, First Prize, GE-Tsinghua University
- ▲ 2003 – 2004 NuclTch Scholarship, First Prize, THscan-Tsinghua University
- ▲ 2002 – 2003 Tsinghua Social Work Award, Second Prize, Tsinghua University
- ▲ 2002 – 2003 CAEP Scholarship, First Prize, Tsinghua University

- ▲ 2001 – 2002 Excellence Studying Scholarship, Tsinghua University

Refereeing

- ▲ 2009 AAPM annual meeting
- ▲ 2008 – present Health Physics
- ▲ 2007 – present Applied Radiation and Isotopes
- ▲ 2006 – present Medical Physics (Guest Associate Editor/Reviewer)
- ▲ 2006 – present Journal of Applied Clinical Medical Physics
- ▲ 2005 – present Physics in Medicine and Biology

Community Activities

- ▲ Chief of Medical Physics Research Associates\Residents at FCCC, 2006 – 2007
- ▲ President of the Society of Engineering Physics Graduate Students at Tsinghua University 2002-2004
- ▲ Assistant Research Administrator of Engineering Physics Graduate Students at Tsinghua University 2002-2004
- ▲ Graduate Students Class Monitor at Department of Engineering Physics 2001-2003

Patents

1. **J. Fan** and C.-M. Ma, Shielding for Compact Radiation Sources (pending)

Publications

Peer-reviewed papers

1. E. Fourkal, **J. Fan**, I. Velchev, *Absolute dose reconstruction in proton therapy using PET imaging modality: Feasibility study*, Submitted to Phys. Med. Biol.
2. Q. Xu, **J. Fan**, L. Jin, T. Lin, J. Li and C. Ma *Jitter reduction in manually delineated clinical target volume (CTV) contours for prostate cancer: a feasibility study*, Submitted to Phys. Med. Biol.

3. **J. Fan**, K. Paskalev, L. Wang, L. Jin, J. Li, A. Eldib and C. Ma, *Determine the output factors of stereotactic radiosurgery beams using both experimental and Monte Carlo method*, Submitted to Medical Physics.
4. W. Luo, J. Li, E. Fourkal, **J. Fan**, X. Xu, Z. Chen and C.-M. Ma, *Dosimetric advantages of IMPT over IMRT for laser-accelerated proton beams*, Phys Med Biol. 53 (2008) 7151-7166.
5. Jin, L, Ma, C, **Fan, J**, Price, R A, Chen, L, Wang, L, Chi, Z, Xu, Q, Sherif M and Li, J.S, *Dosimetric verification of modulated electron radiotherapy delivered using a photon multileaf collimator for intact breasts*, Phys. Med. Biol., 53 (2008) 6009-6025
6. Qiu, Rui; Li, Junli; Zhang, Zhan; Wu, Zhen; Zeng, Zhi; **Fan, Jiajin**, *Photon SAF calculations based on Chinese mathematical phantom and the comparison with the ORNL phantoms*, Health Physics. 95(6):716-724, December 2008.
7. C. Li, J. Li, J. Cheng, Z. Wu, L. Pei and **J. Fan**, *Research of Point Flux Estimation Method*, NUCLEAR SCIENCE AND ENGINEERING: 159, 1–12 (2008).
8. C-M Ma, JS Li, J. Deng and **J. Fan**, *Implementation of Monte Carlo Dose Calculation for CyberKnife treatment planning*, Journal of Physics. 102 (2008) 012016.
9. **J. Fan**, W. Luo, E. Fourkal, T. Lin, J. Li, I. Veltchev and C.-M. Ma, *Shielding design for a laser-accelerated proton therapy system*, Phys. Med. Biol. 52 (2007) 3913-3930.
10. **J. Fan**, J. Li, J. Deng and C.-M. Ma, *6 MV photo beam phase space reconstruction of a Cyberknife system for Monte Carlo dose calculation*, Proceeding of ICCR 2007.
11. E. Fourkal, I. Veltchev, **J. Fan**, W. Luo and C-M. Ma, *Energy optimization procedure for laser-accelerated proton treatment planning*, Medical Physics 34 577-584 (2007).
12. Z. Zhang, J. Li, Z. Wu, J. **J. Fan** and Z. Zeng, *Comparison and application of variance-reduction techniques used in internal radiation dose calculations for small organs*, Tsinghua Science and Technology, S1, 2007

13. J. Li, **J. Fan**, J. Deng and C.-M. Ma, *Monte Carlo treatment planning for a stereotactic radiotherapy system*, Proceeding of ICCR 2007.
14. C.-M. Ma, E. Fourkal, I. Veltchev, J. Li, W. Luo, **J. Fan**, T. Lin and A. Pollack, *Development of a laser-proton radiotherapy system*, Proceeding of ICCR 2007.
15. Z. Chen, C.-M. Ma, J. Yang, J. Li, W. Luo, **J. Fan**, K. A. Paskalev R. A. Price Jr, Y. Chen and L. Chen, *Monte Carlo Dose Verification of MR Image Based IMRT Treatment Planning for Prostate Cancer*, Proceeding of ICCR 2007.
16. N. Wang, J. Cheng, J. Li, **J. Fan**, H. Wang, J. Zheng, *Mathematical phantom of Chinese reference man and development of the software*, Nuclear Electronics & Detection Technology, Vol.27 No.3 P.549-553, 2007
17. **J. Fan**, J. Li, L. Chen, S. Stathakis, W. Luo, F. Du Plessis, W. Xiong, J. Yang and C.-M. Ma, *A Practical Monte Carlo MU Verification Tool for IMRT Quality Assurance*, Phys. Med. Biol. 51 (2006) 2503-2515.
18. W. Luo, J. Li, R. Price, Jr., L. Chen, J. Yang, **J. Fan**, Z. Chen, S. McNeeley, X. Xu, and C-M Ma, *Monte Carlo based IMRT dose verification using MLC log files and R/V outputs*, Med. Phys. 33, 2557-2564 (2006).
19. C.-M. Ma, I. Veltchev, E. Fourkal, J. Li, W. Luo, **J. Fan**, T. Lin and A. Pollack, *Development of a Laser Driven Proton Accelerator for Cancer Therapy*, Laser Phys. 16 (2006) 639-646.
20. H. Wang, J. Li, J. Cheng, **J. Fan**, J. Zheng, *The Internal radiation dose calculations based on Chinese mathematical phantom*, Nuclear Electronics & Detection Technology, Vol.26, p915-918,931, June 2006.
21. **J. Fan**, J. Li, J. Cheng, L. Pei, *Improvements of pseudorandom number generator used in Monte Carlo calculations with combining methods*, Nuclear Electronics & Detection Technology, Vol.23, p 15-18,80, Jan 2004.
22. **J. Fan**, J. Li, J. Cheng, J. Zheng, J. Zhang, *Comparison of different Monte Carlo physical transport models in internal radiation dose calculations*,

- Nuclear Electronics & Detection Technology, Vol.23, p 507-509,525, Nov. 2003.
23. **J. Fan**, J. Li, J. Cheng, L. Pei, *Forced collision and next event estimation of pulse height tallies*, Science In China Series E - Technological Sciences, 46 (3): 271-277 June 2003.
 24. Y. Wang, J. Cheng, **J. Fan**, Y. Li, Y. Li, *Calculation of MRPC sensitivity to Gamma rays*, Nuclear Electronics & Detection Technology, Vol.23, p 33-38, Jan. 2003.
 25. **J. Fan**, J. Li, J. Zhen, J. Zhang, *The developments in Chinese human phantoms and internal dose calculations using mathematical phantoms*, The First Asian and Oceanic Congress for Radiation Protection (AOCR-1), 2002.
 26. **J. Fan**, Y. Wang, J. Cheng, P. Yang, H. Tian, H. Du, *Development of visual platform of MCNP4B*, Nuclear Electronics & Detection Technology, Vol.22, p 52-57, Jan. 2002.
 27. Q. Lou, Y. Li, Y. Li, **J. Fan**, Y. Wang, *Study on the sensitivity of CdWO₄ scintillating detector for high energy X-ray imaging system*, Nuclear Electronics & Detection Technology, Vol.22, p 331-335, July. 2002.
 28. **J. Fan**, J. Ni, J. Li, J. Cheng, Z. Li, *The application research with the multi-energy method in explosive and drug detection*, Nuclear Electronics & Detection Technology, Vol.21, No.5, p 380-384, Sep. 2001.
 29. Q. Su, J. Cheng, X. Wang, **J. Fan**, *Consideration of Some Problems in Detecting Activity of Natural Radionuclide*, Radiation Protection Bulletin, Issue 2, 2001.

Peer-reviewed abstracts

1. **J Fan**, Q Xu, L Jin, A Eldib, Z Chi, L Wang, P Robert, L Chen, C Ma, *Tumor control Probability Predictions for Adaptive Radiotherapy to Hypoxic Tumors*, International Journal of Radiation Oncology*Biophysics, Volume 72 , Issue 1 , Pages S150 - S150 (2008)
2. L Jin, C Ma, Q Xu, Z Chi, **J Fan**, A Eldib, J Li, *Scalp Treatment Technique Using Modulated Electron Radiotherapy Delivered By Photon Multileaf*

- Collimator*, International Journal of Radiation Oncology*Biology*Physics, Volume 72 , Issue 1 , Pages S643 - S643 (2008)
3. Q Xu, Y Chen, T Lin, L Jin, A Eldib, Z Chi, **J Fan**, L Chen, C Ma, *4DCT reconstruction based on accurate vector field inter/extrapolation*, International Journal of Radiation Oncology*Biology*Physics, Volume 72 , Issue 1 , Pages S627 - S628 (2008)
 4. A Eldib, L Jin, T Lin, J Fan, C Ma, *Feasibility of an Electron-specific Multileaf Collimator to Replace Patient specific Cutouts*, International Journal of Radiation Oncology*Biology*Physics, Volume 72 , Issue 1 , Pages S681 - S681 (2008)
 5. **J Fan**, E Fourkal, A Guemnie Tafo, I Veltchev, J Li, Q Xu, T Lin, L Wang, K Paskalev, L Jin, C Ma, *Cellular radiosensitivity of laser accelerated protons: a feasibility study*, Medical Physics, Volume 35, Issue 6, pp. 2816-2816 (2008)
 6. **J Fan**, E Fourkal, A Guemnie Tafo, I Veltchev, R Price, W Luo, J Li, A Eldib, L Chen, C Ma, *Laser-Proton Inter-Track Effect and the DNA Double-Strand Break*, Medical Physics, Volume 35, Issue 6, pp. 2848-2848 (2008)
 7. Z Chi, J Li , L Jin , **J Fan**, T Lin, Q Xu, C Ma, *Evaluation of IMRT plans from three treatment planning systems based on independent Monte Carlo dose calculation*, Med. Phys. 35 (2008)
 8. Z Chi, L Wang, L Chen, **J Fan**, L Jin, C Ma, *Comparison of prostate IMRT plans from three commercial Treatment Planning Systems*, Med. Phys. 35 (2008)
 9. A Guemnie Tafo, J Li, **J Fan**, E Fourkal, C Ma, *Investigation of optimal margins for proton therapy of lung cancer*, Med. Phys. 35 (2008)
 10. T Lin, L Wang, **J Fan**, J Li, C Ma, *Monte Carlo Dose Verification and Quality Assurance for Multi-Target SRT*, Med. Phys. 35 (2008)
 11. C Ma, E Fourkal, I Veltchev, J Li, **J Fan**, T Lin, A Guemnie, *A laser-ion accelerator for radiation therapy application*, Med. Phys. 35 (2008)

12. M Hossain, Y Chen, **J Fan**, T Lin, R Price, J Li, C Ma, *A Feasibility Study of CT-based IMRT Planning for Total Body Irradiation*, Med. Phys. 35 (2008)
13. A Eldib, L Jin, **J Fan**, T Lin, J Li, C Ma, *Investigation of electron beam collimated by motorized electron multi leaf collimator (eMLC) designed for fixed and modulated electron beam therapy*, Med. Phys. 35 (2008)
14. L Jin, C Ma, Q Xu, Z Chi, **J Fan**, J Li, *Geometrical uncertainty caused by prostate rotation during radiotherapy*, Med. Phys. 35 (2008)
15. JS Li, **J Fan**, C-M Ma, *Monte Carlo investigation of the new Cyberknife with a high dose rate*, Med. Phys. 35 (2008)
16. W Luo¹, C Ma, F Yin, **J Fan**, *Dosimetric effect of energy spread of proton beams*, Med. Phys. 35 (2008)
17. A Eldib, L Jin, Q Xu, **J Fan**, J Li, C Ma, *An optimal jaw setting for an electron-specific multileaf collimator (eMLC) developed for modulated electron radiation therapy (MERT)*, Med. Phys. 35 (2008)
18. Q Xu, **J Fan**, L Chen, M Hossain, Z Chi, L Jin, T Lin, A Eldib, J Li, C Ma, *An improved Demons algorithm by incorporating accurate voxel motion calculation*, Med. Phys. 35 (2008)
19. C Ma, J Li, **J Fan**, L Jin, A Eldib, R Price, L Wang, L Chen, M Hossain, *Developing hardware and software tools for advanced mixed beam radiotherapy*, Med. Phys. 35 (2008)
20. L Jin, C Ma, A Eldib, **J Fan**, Z Chi, J Li, *Dosimetric Verification of Modulated Electron Radiotherapy Delivery Using Photon Multileaf Collimator*, Med. Phys. 35 (2008)
21. L Wang, K Paskalev, S Feigenberg, **J Fan**, M Buyyounouski, B Lally, R Price, C Ma, *Image Guided Hypofractionated IMRT for Multiple Intracranial Metastases – An Alternative to Arc-based SRS*, Med. Phys. 35 (2008)
22. Q Xu, **J Fan**, Y Chen, L Chen, J Li, Z Chi, C Ma, *Jitter reduction in manually delineated clinical target volume (CTV) contours for prostate cancer*, Med. Phys. 35 (2008)

23. G Mora, J Li, **J Fan**, A Jesus, C Ma, *Using Dose Mass Histograms (DMH) for the Evaluation of Head and Neck IMRT plans Calculated by Monte Carlo*, Med. Phys. 35 (2008)
24. E Fourkal, **J Fan**, C Ma, *Calculation of positron emitters' matrix for absolute dose reconstruction in proton therapy*, Med. Phys. 35 (2008)
25. I Veltchev, A Guemnie Tafo, T Lin, E Fourkal, **J Fan**, J Li, A Yogo, S Orimo, C Ma, *Improved proton yield from a laser-proton accelerator*, Med. Phys. 35 (2008)
26. K Paskalev, **J Fan**, Y Chen, S Feigenberg, L Wang, M Buyyounouski, D Laske, C Ma, *Track-based treatment planning for radiosurgery: a modified McGill technique*, Med. Phys. 35 (2008)
27. J Yang, S Tong, **J Fan**, *A new Monte Carlo code for Gamma Knife simulations*, Med. Phys. 35 (2008)
28. C. Ma, J. Li, L. Jin, A. ElDib, **J. Fan**, R.A. Price, G. Freedman, P. Anderson and N. Nicolaou, **Advanced Mixed Beam Treatment Techniques for Breast and Head and Neck Cancers** International Journal of Radiation Oncology*Biophysics*Physics, Volume 69, Issue 3, Supplement 1, Page S47, 1 November (2007)
29. **J Fan**, K Paskalev, J Li, E Fourkal, L Jin, T Lin, W Luo, and C Ma, *Impact of the Isocenter Shift as a Function of Couch and Gantry Angles On the Stereotactic Radiosurgery (SRS) Dose*, Med. Phys. 34, 2457 (2007)
30. **J Fan**, K Paskalev, J Li, L Wang, L Chen, R Price, L Jin, A ElDib, and C Ma, *Determination of Output Factors for Stereotactic Radiosurgery Beams by Monte Carlo and Measurements*, Med. Phys. 34, 2522 (2007)
31. L Jin, C Ma, A ElDib, **J Fan**, T Lin, and J Li, *Characteristics of Electron Beams Collimated by An Electron Multileaf Collimator*, Med. Phys. 34, 2643 (2007)
32. I Veltchev, T Lin, E Fourkal, **J Fan**, J Li, C Ma, S Orimo, and K Ogura, *Beam of Laser-Accelerated Protons: Generation and Characterization*, Med. Phys. 34, 2631 (2007)
33. T Lin, Y Chen, L Jin, **J Fan**, and C Ma, *Investigation of Gated, High Dose Rate IMRT Step and Shoot Delivery*, Med. Phys. 34, 2626 (2007)

34. C Ma, J Li, J Deng, and **J Fan**, *Investigation of Fast Monte Carlo Dose Calculation for CyberKnife SRS/SRT Treatment Planning*, Med. Phys. 34, 2589 (2007)
35. E Fourkal, **J Fan**, K Paskalev, C Ma, and I Velchev, *Absolute Dose Reconstruction in Proton Therapy Using PET Imaging Modality: Feasibility Study*, Med. Phys. 34, 2557 (2007)
36. C Ma, I Velchev, T Lin, E Fourkal, J Li, **J Fan**, S Orimo, and K Ogura, *Laser-Proton Acceleration for Radiation Therapy*, Med. Phys. 34, 2550 (2007)
37. A Eidib, L Jin, **J Fan**, J Li, and C Ma, *Monte Carlo Investigation of Electron Beams Collimated by An Electron-Specific MLC for Modulated Electron Radiotherapy*, Med. Phys. 34, 2471 (2007)
38. T Lin, J Li, **J Fan**, L Jin, W Luo, R Price, L Chen, E Fourkal, and C Ma, *Investigation of the Beam Penumbra Effect On IMRT Dose Conformity and Uniformity*, Med. Phys. 34, 2464 (2007)
39. W Luo, F Yin, C Ma, **J Fan**, and H Song, *Dosimetric Comparison of MapCheck with Monte Carlo Simulations*, Med. Phys. 34, 2440 (2007)
40. W Luo, C Ma, F Yin, and **J Fan**, *Developing a Convenient and Effective IMRT QA Procedure Using MLC Dynalog Files*, Med. Phys. 34, 2435 (2007)
41. L Jin, C Ma, **J Fan**, A Eldib, T Lin, and J Li, *3D CT Image-Based Treatment Planning of Modulated Electron Radiotherapy for Breast Cancer*, Med. Phys. 34, 2401 (2007)
42. E. Fourkal, I. Velchev, **J. Fan**, W. Luo, and C.-M. Ma, *Energy optimization procedure for treatment planning with laser-accelerated protons*, Med. Phys. 34, 577 (2007)
43. C-M Ma, JS Li, J Deng and **J Fan**, *Implementation of Monte Carlo simulations for CyberKnife® treatment planning dose calculation*, Third McGill Workshop on Monte Carlo Techniques in Radiotherapy Delivery and Verification, Montreal, May 29 – June 1, 2007
44. **J. Fan**, J. Li, W. Luo, T. Lin, Z. Chen, C. Ma, *Dose Painting Using Energy and Intensity Modulated Proton Therapy*, Int. J. Radiat. Oncol. Biol. Phys., S691-S692, ASTRO (2006)

45. T. Lin, K. Flippo, D. Umstadter, I. Veltchev, **J. Fan**, E. Fourkal and C.-M. Ma, *The Implementation of Ultrahigh Intensity Laser Based Proton Accelerator for Proton Therapy*, APS (2006)
46. S. Stathakis, **J. Fan**, J. Li, C. Ma, *The Effect Of IMRT Treatment On Second Malignancies*, Int. J. Radiat. Oncol. Biol. Phys., 66, S681-S682 ASTRO (2006)
47. **J Fan**, J Li, L Chen, R Price, K Paskalev, Z Chen, S Stathakis, W Luo, and C Ma, *Generic Source Models for Commonly Used Clinical Accelerator Beams for Monte Carlo Treatment Planning* (oral presentation), Med. Phys. 33, 2292 (2006).
48. **J Fan**, J Li, W Luo, E Fourkal, S Stathakis, T Lin, and C Ma, *Aperture-Based Beam Delivery for Intensity Modulated Proton Therapy* (oral presentation), Med. Phys. 33, 2190 (2006).
49. T Lin, **J Fan**, J Li, Z Chen, W Luo, and C Ma, *The Effect of MLC Geometry On Monte Carlo Simulated Beam Output for IMRT*, Med. Phys. 33, 2141 (2006).
50. E Fourkal, W Luo, **J Fan**, and C Ma, *Energy and Intensity-Modulated Radiation Therapy Using Protons. To Optimize Or Not to Optimize?*, Med. Phys. 33, 2097 (2006).
51. C Ma, J Li, S Stathakis, A Leal, F DuPlessis, **J Fan**, Y Chen, L Chen, S McNeeley, and R Price, *Advanced Mixed Beam Radiotherapy for Breast and Head and Neck*, Med. Phys. 33, 2256 (2006).
52. W Luo, J Li, R Price, L Chen, **J Fan**, Z Chen, T Lin, L Wang, and C Ma, *Developing a Comprehensive Patient-Specific QA Procedure for IMRT* (oral presentation), Med. Phys. 33, 2247 (2006).
53. Z Chen, C Ma, J Li, K Paskalev, R Price, W Luo, **J Fan**, Y Chen, T Lin, and L Chen, *Monte Carlo Investigation of Dose Perturbation by Hip Replacements in Intensity Modulated Radiotherapy of Prostate Cancer*, Med. Phys. 33, 2122 (2006).
54. C Ma, I Veltchev, E Fourkal, J Li, **J Fan**, T Lin, W Luo, and S Stathakis, *Laser-Accelerated Proton Therapy: Target Chamber Design and Shielding Requirements*, Med. Phys. 33, 2117 (2006).

55. T Lin, **J Fan**, W Luo, J Li, Z Chen, and C Ma, *Is It Safe to Switch Patients Between Different Linacs*, Med. Phys. 33, 2117 (2006).
56. Z Chen, C Ma, J Li, K Paskalev, R Price, W Luo, **J Fan**, S Stathakis, Y Chen, T Lin, and L Chen, *Effect of Voxel Size On Monte Carlo Dose Calculation for Intensity Modulated Radiotherapy Treatment Planning*, Med. Phys. 33, 2095 (2006).
57. W Luo, J Li, **J Fan**, E Fourkal, Z Chen, T Lin, and C Ma, *A Monte Carlo Study On Carbon RBE for Carbon Therapy*, Med. Phys. 33, 2056 (2006).
58. W. Luo, E. Fourkal, J. Li, **J. Fan** and C.-M. Ma, *A Monte Carlo Study on RBE Effect in Laser-Proton Therapy*, Int. J. Radiat. Oncol. Biol. Phys. 63 S537 (2005) ASTRO 2005
59. J Yang, J Li, L Chen, Z Chen, W Luo, **J Fan**, S Stathakis, R Price, and C Ma, *Monte Carlo Investigation of Heterogeneity Effect for Head and Neck IMRT* (oral presentation), Med. Phys. 32, 2166 (2005).
60. **J Fan**, W Luo, J Li, E Fourkal, Z Chen, and C Ma, *Implementation of Monte Carlo Dose Verification for Proton Therapy QA* (oral presentation), Med. Phys. 32, 2164 (2005).
61. **J Fan**, J Li, L Chen, W Xiong, S Stathakis, W Luo, F du Plessis, and C Ma, *A Practical Monte Carlo MU Verification Tool for IMRT Quality Assurance*, Med. Phys. 32, 1979 (2005).
62. S Stathakis, **J Fan**, J Li, and C Ma, *The Impact of Prostate IMRT On Radiation Induced Malignancies*, Med. Phys. 32, 2039 (2005).
63. E Fourkal, I Veltchev, **J Fan**, J Li, W Luo, and C Ma, *Analytical Calculation of Spread-Out-Bragg-Peak Distributions for Laser-Accelerated Proton Beams*, Med. Phys. 32, 2027 (2005).
64. W Luo, J Li, E Fourkal, **J Fan**, J Yang, R Price, and C Ma, *Monte Carlo Dosimetric Verification for IMRT QA Using MLC Log Files and EPID*, Med. Phys. 32, 1985 (2005).
65. J Li, W Xiong, **J Fan**, and C Ma, *Partial Breast Treatment Using Energy- and Intensity- Modulated Photon and Electron Beams*, Med. Phys. 32, 1968 (2005).
66. Z Chen, C Ma, J Yang, K Paskalev, J Li, **J Fan**, T Richardson, L Palacio, and L Chen, *Investigation of MR Image Distortion for Radiotherapy*

Treatment Planning of Prostate Cancer, oral presentation, Med. Phys. 32, 1903 (2005).

67.W Luo, E Fourkal, J Li, **J Fan**, J Yang, and C Ma, *A Dosimetric Comparison Between Laser-Proton Therapy and Photon IMRT*, Med. Phys. 32, 1895 (2005).

Invited Talks / Presentations

1. *"Tumor control Probability Predictions for Adaptive Radiotherapy to Hypoxic Tumors"*, ASTRO 50, Boston, 09/2008
2. *"Track-based treatment planning for radiosurgery: a modified McGill technique"*, AAPM 50, Houston, 07/30/2008
3. *"Determine the output factors of stereotactic radiosurgery beams using both experimental and Monte Carlo method "*, AAPM 49, Minneapolis, 07/30/2007
4. *"6 MV photo beam phase space reconstruction of a Cyberknife system for Monte Carlo dose calculation"*, ICCR 2007, Ottawa, 06/04/2007
5. *"Shielding considerations for a laser-proton system, experimental and clinical"*, Fox Chase Cancer Center, 01/18/2007
6. *"Generic Source Models for Commonly Used Clinical Accelerator Beams for Monte Carlo Treatment Planning"*, AAPM 48, Orlando, 08/03/2006
7. *"Aperture-Based Beam Delivery for Intensity Modulated Proton Therapy"*, AAPM 48, Orlando, 08/01/2006
8. *"A Measurement Based Generic Source Model for Monte Carlo Treatment Planning"*, Fox Chase Cancer Center, 07/06/2006
9. *"Implementation of Monte Carlo Dose Verification for Proton Therapy QA"*, AAPM 47, Seattle, July 2005
10. *"A Practical Monte Carlo MU Verification Tool for IMRT Quality Assurance"*, Young Investigator Symposium, AAPM-Delaware Valley Chapter, Thomas Jefferson University, Philadelphia, June 2005
11. *"Introduction to point-detector method and its application in point dose estimation"*, Fox Chase Cancer Center, January 2005

12. "Research of Rare But Important Events in Monte Carlo Simulation", The Eighth Monte Carlo Method and Application Meeting, Kunming, China, March 2004
13. "Development of point-detector method in Monte Carlo simulation", The Second Tsinghua Ph. D. student Forum, Beijing, China, Award For Excellence Presentation November 2003
14. "Forced collision and next event estimation of pulse height tallies", The Oil Log Annual Meeting, Huangshan, China, Invited Talk, November, 2002
15. "Development of ring detector method in Monte Carlo point dose calculation", The Oil Log Annual Meeting, Huangshan, China, November, 2002