



Yong Yang, PhD

**University of Pittsburgh
School of Medicine**

EDUCATION AND TRAINING

2001-2005	Stanford University, Stanford, CA	Postdoctora Fellowship Medical Physics
2001	Peking Union Medical College Radiation Oncology Beijing, China	PhD Physics
1994	Peking Union Medical College Radiation Oncology Beijing, China	Radiation Physics Residency Physics
1992	Sichuan University Chengdu, China	M.S. Atomic and Molecular Physics
1989	Sichuan University Chengdu, China	B.S. Applied Physics

POSITIONS

- 2005-Present Chief Medical Physicist, Department of Radiation Oncology,
UPMC Cancer Centers, Pittsburgh, PA
- 01/1995– 09/1998 Associate Physicist, Department of Radiation Oncology,
Chongqing Xinqiao Hospital,
Chongqing, China
- 09/1992– 01/1994 Assistant Physicist, Department of Radiation Oncology,
Chongqing Xinqiao Hospital,
Chongqing, China

RESEARCH EXPERIENCE

Developed an accurate patient-based Monte Carlo dose calculation algorithm.

Participated in the development of a PC 3D radiation treatment planning system.

Developed a three-source model for linear accelerators and implemented an accurate head scatter radiation calculation algorithm.

Implemented an independent dose verification algorithm with the inclusion of head scatter and MLC transmission for IMRT.

Developed an optimization algorithm to incorporate leaf transmission and head scatter corrections into step-and-shoot leaf sequences for IMRT.

Developed finite-sized detector and EPID-based techniques for routine quality assurance of MLC leaf positioning.

Implemented a clinical knowledge-based IMRT optimization algorithm and biological model-based optimization for functional image-guided IMRT

PUBLICATIONS

1. **Yang Y** and Xing L: "Biological Consideration of Fractionation Optimization in External Beam Radiation Therapy". International Journal of Radiation Oncology, Biology, Physics, (submitted).
2. **Yang Y** and Xing L: "Clinical Knowledge-Based Inverse Treatment Planning", Physics in Medicine and Biology, 49,5101-5117, 2004.
3. **Yang Y** and Xing L: "Towards Biologically Conformal Radiation Therapy (BCRT): Selective IMRT Dose Escalation Under the Guidance of Spatial Biology Distribution", Medical physics, (Accepted).
4. Tang XW, **Yang Y**, Xing L, et al: "Measurement of Ionizing Radiation Using Carbon Nanotube Field Effect Transistor", Physics in Medicine and Biology, (In press).
5. **Yang Y** and Xing L: "Inverse Treatment Planning with Adaptively Determined Voxel-Dependent Importance Factor", Medical Physics, 31, 2839-2844, 2004.
6. **Yang Y** and Xing L: "An Accurate and Efficient Method for Determining Multileaf Collimator Leaf Positioning Errors Using an Electronic Portal Image Device". Physics in Medicine and Biology, 49, 1521-1533, 2004.
7. **Yang Y**, Xing L, Li JG, Boyer AL, Luxton G, and Chen Y: "An Independent Dose Verification Algorithm with Inclusion of Head Scatter and MLC Transmission in Intensity Modulated Radiation Therapy", Medical Physics, 30, 2937-2947, 2003.
8. **Yang Y** and Xing L: "Incorporating Leaf Transmission and Head Scatter Corrections into Step-and-Shoot Leaf Sequences for IMRT". International Journal of

Radiation Oncology, Biology, Physics, 55, 1121- 1134, 2003.

9. **Yang Y** and Xing L: “Using the Volumetric Effect of a Finite-Sized Detector for Routine Quality Assurance of MLC Leaf Positioning”. Medical Physics, 30, 433-441, 2003.

10. **Yang Y**, Xing L, Boyer AL, Song YX and Hu YM: “A Three-Source Model for the Calculation of Head Scatter Factors”, Medical Physics 29, 2024-2033, 2002.

11. **Yang Y**, Dai JR and Hu YM: “The Applications of EPID in Beam Quality Controls and Dose Distribution Verification in Patients”, Chinese Journal of Radiation Oncology, 9(3), P207-211, 2000.

12. Dai, JR, **Yang Y** and Hu YM: “Rapid Calculation of the Monitor Units for Multileaf Collimator Shaped Irregular Fields”, Chinese Journal of Radiation Oncology, 9(2), 131-134, 2000.

13. Dai, JR, **Yang Y** and Hu YM: “Determination of Beam Parameters by Dose-Gradient Analysis”. Chinese Journal of Radiation Oncology, 9(3), P197-201, 2000.

14. **Yang Y**, Zhang HZ and Hu YM: “A Simple and Accurate Algorithm Based on a Dual Source Photon Beam Model for Calculating Collimator Scatter Factor”, Chinese Journal of Radiation Oncology, 8(4), 236-239, 1999.

15. **Yang Y** and Li DZ: “The Physical and Biological Basis of Stereotactic Radiosurgery”, Chinese Version Foreign Medical Sciences: Radiation Medical and Nuclear medicine, 22(3), 134-137, 1998.

16. **Yang Y** and Li DS: “The Comparison of Two Calibration Techniques for Ir-192 Micro-Source Used in HDR Treatment Unit”. Chinese Journal of Radiation Oncology, 5(4), 290-292, 1996.

BOOK CHAPTER

1. Xing L, **Yang Y**, Li J, Chen Y, Luxton G, Boyer A (2003): Monitor Unit Calculation and IMRT plan Validation. In: Intensity Modulated Radiation Therapy, Palta J and Mackie RT (Editors). Medical Physics Publishing, Madison, Wisconsin.
2. Xing L, Wu Q, **Yang Y** and Boyer AL: Physics of IMRT and Inverse Treatment Planning, in Intensity Modulated Radiation Therapy: A Clinical Perspective, Mundt AF and Roeske JC. (Editors), BC Decker Inc. Publisher, Hamilton, Canada, in press.
3. Xing L, **Yang Y**, and Spielman D, Molecular/Functional Image-Guided Radiation Therapy, in IMRT Handbook and Clinical Applications, T. Bortfeld, R. Schmidt-Ulrich, We De Neve (editors), Springer-Verlag Heidelberg, Berlin, in press.

PRESENTATION AND ABSTRACTS

1. **Yang Y** and Xing L: Clinical knowledge-Based Inverse treatment planning, *46th annual Meeting of AAPM*, Pittsburgh, July 24-29 2004.
2. Tang XW, **Yang Y**, Xing L, et al: Measurement of Ionizing Radiation Using Carbon Nanotube Field Effect Transistor, *46th annual Meeting of AAPM*, Pittsburgh, July 24-29 2004.
3. **Yang Y** and Xing L: Inverse Treatment Planning with Adaptively Determined Voxel-Dependent Importance Factor, *46th annual Meeting of AAPM*, Pittsburgh, July 24-29 2004.
4. **Yang Y** and Xing L: Quantitative Measurement of MLC Leaf Displacements Using an Electronic Portal Image Device. *XIVth ICCR, May 10-13, 2004, Seoul, Korea*.
5. **Yang Y** and Xing L: An accurate and efficient method for determining multileaf

collimator leaf positioning errors using an electronic portal image device. *45th annual meeting of ASTRO*, Salt Lake City, October, 2003.

6. **Yang Y** and Xing L: Using the Volumetric Effect of a Finite-Sized Detector for Routine Quality Assurance of MLC Leaf Positioning *45th annual Meeting of AAPM*, San Diego, August 9-14 2003.

7. **Yang Y**, Xing L, Boyer AL, Song YX and Hu YM: A Three-Source Model for the Calculation of Head Scatter Factors, *44th annual Meeting of AAPM*, Montreal, Canada, July 14-18 2002, *Medical Physics* 29(6): 1288.

8. **Yang Y** and Xing L: An algorithm to Incorporate Leaf Transmission and Head Scatter Corrections into Step-and-Shoot Leaf Sequences for IMRT. *44th annual Meeting of AAPM*, Montreal, Canada, July 14-18 2002, *Medical Physics* 29(6): 1336.

9. **Yang Y**, Xing L, Li JG, Boyer AL, Luxton G, and Chen Y: An Independent Dose Verification Algorithm with Inclusion of Head scatter and MLC Transmission in Intensity Modulated Radiation Therapy. *44th annual meeting of ASTRO*, New Orleans, October 6-10, 2002.

10. **Yang Y** and Hu YM: A Monte Carlo Dose Calculation for Co-60 Photon Beams. *Proceedings of the 2nd Beijing International Congress on Medical Radiation Physics*, 74, Beijing, May 2000.
