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EDUCATION

- 2003: Ph.D. in Experimental Particle Physics,
Brandeis University, Waltham, Massachusetts.
- 1997: M.A. in Physics,
Brandeis University, Waltham, Massachusetts.
- 1995: B.S. in Mathematics and Physics,
Santa Clara University, Santa Clara, California.

EMPLOYMENT

CHIEF PHYSICIST

Department of Radiation Oncology, North Shore Medical Center
Peabody, MA
January 2009 – present.

PHYSICIST

Department of Radiation Oncology, North Shore Medical Center
Peabody, MA
August 2008 – January 2009.

ASSISTANT PROFESSOR

Department of Radiation Oncology, Rush University Medical Center
Chicago, Illinois
September 2007 – August 2008.

INSTRUCTOR

Department of Radiation Oncology, Rush University Medical Center
Chicago, Illinois
May 2006 – 2007.

STAFF PHYSICIST

Department of Radiation Oncology, Rush University Medical Center
Chicago, Illinois
May 2004 – 2006

POST-GRADUATE TRAINING

POSTDOCTORAL FELLOW

Department of Radiation Oncology, Rush University Medical Center
Chicago, Illinois
May 2002 – May 2004.

GRADUATE TRAINING

RESEARCH ASSISTANT

Fermi National Accelerator Laboratory and Brandeis University
Batavia, Illinois
1997 – 2002.

GRADUATE TEACHING ASSISTANT

Brandeis University
Waltham, Massachusetts
1996 – 1998.

PROFESSIONAL MEMBERSHIPS

AAPM Member, 2003 – Present.
ABS Member, 2008 – Present.

ADDITIONAL TRAINING

AAPM Brachytherapy Summer School, July 2005.

EDITORIAL RESPONSIBILITIES

Associate Editor – *Medical Physics*.
Referee – *Medical Physics, Technology in Cancer Research and Treatment, Radiotherapy and Oncology, Brachytherapy, Journal of Applied Clinical Medical Physics*.

CERTIFICATION & LICENSURE

Board Certified Medical Physicist: ABR 2007.
Therapeutic Radiological Physicist: Illinois Department of Nuclear Safety 2007-2009.
Radiological Physicist: Massachusetts Department of Public Health 2008-current.

PAPERS

Dickler, A., **Kirk, M.**, Choo, J., Hsi, W., Chu, J., Dowlatshahi, K., Francescatti, D., and Nguyen, C. Treatment Volume and Dose Optimization of the MammoSite Breast Brachytherapy Applicator. *International Journal of Radiation Oncology Biology and Physics* 2004; 59(2):469-474.

Kirk, M., Hsi, W., Chu, J., Niu, H., Hu, Z., Bernard, D., Dickler, A., and Nguyen, C. Dose Perturbation Induced by Radiographic Contrast inside Brachytherapy Balloon Applicators. *Medical Physics* 2004; 31(5):1219-1224.

Niu, H., Hsi, W., Chu, J., **Kirk, M.** Dosimetric Characteristics of the Leipzig Surface Applicators used in the High Dose Rate Brachy-Radiotherapy. *Medical Physics* 2004; 31(12):3372-3377.

Dickler, A., **Kirk, M.**, Chu, J., and Nguyen C. The MammoSite Breast Brachytherapy Applicator: A Review of Technique and Outcomes. *Brachytherapy* 2005; 4(2):74-80.

Kirk, M., Hsi, W., Dickler, A., Chu, J., Dowlatshahi, K., Francescatti, D., and Nguyen, C. Surface Optimization Technique of the MammoSite Breast Brachytherapy Applicator. *International Journal of Radiation Oncology Biology and Physics* 2005; 62(2):366-372.

Dickler, A., **Kirk, M.**, Choo, J., Hsi, W., Chu, J., Dowlatshahi, K., Francescatti, D., Shott, S., and Nguyen, C. Cosmetic Outcome and Incidence of Infection with the MammoSite Breast Brachytherapy Applicator. *The Breast Journal* 2005; 11(5):306-310.

Hsi, W, Zhang, Y., **Kirk, M.**, Bernard, D., Chu, J. Limited Accuracy of Dose Calculation for Large Fields at Deep Depths using the BrainScan v5.21 Treatment Planning System. *Journal of Applied Clinical Medical Physics* 2005; 6(2):12-18.

Khan, A., **Kirk, M.**, Mehta, P., Chu, J., Griem, K., Nguyen, C., and Dickler, A. A Dosimetric Comparison of 3D Conformal, IMRT, and MammoSite Partial Breast Radiation. *Brachytherapy* 2006; 5:183-188.

Dickler, A., **Kirk, M.**, Seif, N., Griem, K., Dowlatshahi, K., Francescatti, D., and Abrams, R. A Dosimetric Comparison of MammoSite HDR Brachytherapy and Xofigo Electronic Brachytherapy. *Brachytherapy* 2007; 6:164-168.

Chen, S., Dickler, A., **Kirk, M.**, Jokich, P., Solmos, G., Dowlatshahi, K., Nguyen, C., and Griem, K. Patterns of Failure After MammoSite Brachytherapy Partial Breast Irradiation: A Detailed Analysis *International Journal of Radiation Oncology Biology and Physics* 2007; 69(1):25-31.

Shah, A., Dickler, A., **Kirk, M.**, Seif, N., Dowlathshahi, K., Siziopikou, K., and Griem K. Case Report of an Isolated Axillary Recurrence After Partial Breast Irradiation. *Medical Dosimetry*. 2008;33(3):222-225

Dickler A, **Kirk M**, Coon A, Bernard D, Zusag T, Rotmensch J, Wazer D. A dosimetric comparison of Xofig Axxent Electronic Brachytherapy and Iridium-192 high-dose-rate brachytherapy in the treatment of endometrial cancer. *Brachytherapy* 2008;7:4:351-354.

Dickler A, **Kirk MC**, Coon A, et al. A dosimetric comparison of MammoSite(®) and ClearPath high-dose-rate breast brachytherapy devices. *Brachytherapy* 2009;8:1:14-18.

Shah A, Chen S, Strauss J, **Kirk M**, et al. A Dosimetric Analysis Comparing Treatment of Low-Risk Prostate Cancer with TomoTherapy Versus Static Field IMRT. *American Journal of Clinical Oncology* 2009;32:2.

Anand P. Shah, Jonathan B. Strauss, **Michael C. Kirk**, Sea S. Chen , Thomas K. Kroc, Thomas W. Zusag. Upright 3D Treatment Planning using a Vertical CT. *Medical Dosimetry* 2009;34(1):82-6.

Gong X, **Kirk M***, Napoli J, et al. Application of a 3D volumetric display for radiation therapy treatment planning I: quality assurance procedures. *Journal of Applied Clinical Medical Physics* 2009;10(3):96-114. (**corresponding author**)

Chu J, Gong X, Cai Y, **Kirk M**, et al. Application of Holographic Display in Radiotherapy Treatment Planning II: A Multi-Institutional Study. *Journal of Applied Clinical Medical Physics* 2009;10(3):115-124.

Shah A, Strauss J, **Kirk M**, et al. A Dosimetric Analysis Comparing Electron Beam with the Mammosite Brachytherapy Applicator for Intact Breast Boost. *Physica Medica* 2010;26:2: 80-87.

Coon A, Dickler A, **Kirk M**, et al. Tomotherapy and multi-field IMRT planning reduce cardiac doses in left-sided breast cancer patients with unfavorable cardiac anatomy. *International Journal of Radiation Oncology Biology and Physics* 2009; *In Press*.

Kirk M, Shah A, Coon A, et al. Normal Tissue Sparing and Dose Homogeneity for Intensity-Modulated Based Simultaneous Integrated Boost Breast Radiotherapy. *Submitted to Medical Dosimetry* 2010.

Kirk M, Coon A, Dickler A, et al. A Dosimetric Comparison of Xofig Axxent Electronic Brachytherapy and Ir-192 HDR Brachytherapy in the Treatment of Gynecologic Cancer using a Syed Template. *Submitted to Physica Medica: European Journal of Medical Physics* 2010.

ABSTRACTS

Dickler, A. **Kirk, M.**, Choo, J., Hsi, W., Chu, J., Nguyen, C., and Dowlat, K. Treatment Volume and Dose Optimization of the MammoSite Breast Brachytherapy Applicator. *International Journal of Radiation Oncology Biology and Physics*, Sup. 2003; 57(2): S311.

Dickler, A., **Kirk M.**, Choo, J., Hsi, W., Chu, J., Dowlatshahi, K., Francescatti, D., Shott, S., and Nguyen, C. Cosmetic Outcome and Incidence of Infection with the MammoSite Breast Brachytherapy Applicator. *International Journal of Radiation Oncology Biology and Physics*, Sup. 2004; 60(1): S398-399.

Kirk, M., Dickler, A., Hsi, W., Chu, J., Dowlatshahi, K., Francescatti, D., and Nguyen, C. Surface Optimization of the MammoSite Applicator. *International Journal of Radiation Oncology Biology and Physics*, Sup. 2004; 60(1): S598-599.

M. Kirk, A. Dickler, P. Mehta, A. Khan, J. Chu, K. Griem and C. Nguyen
A Dosimetric Analysis Comparing an Electron Tumor Bed Boost with a Tumor Bed Boost Utilizing the MammoSite Breast Brachytherapy Applicator
*International Journal of Radiation Oncology*Biology*Physics, Volume 63, Supplement 1, 1 October 2005, Page S257*

A. Dickler, **M. Kirk**, A. Khan, P. Mehta, J. Chu, K. Griem and C. Nguyen
A Dosimetric Comparison of 3D Conformal, IMRT, and MammoSite Partial Breast Radiation. *International Journal of Radiation Oncology*Biology*Physics, Volume 63, Supplement 1, 1 October 2005, Pages S176-S177*

Kirk, M., Chu, J., Zhang, Y. Analysis of the correlation between MLC file parameters and IMRT QA. *Medical Physics* 2005; 32, 1980.

Blazek, E., Khan, A., Mehta, P., Foutch, J., **Kirk, M.**, Chu, J., Abrams, R.
Clonogenic Survival Does Not Uniformly Increase with Split Time between Halves of 2-Gy Fractions: Implications for IMRT. Accepted for RRS 2005.

Kirk, M., Dickler, A., et al. Simultaneous Integrated Boost Utilizing IMRT for the Treatment of Breast Cancer. *Medical Physics*: 33, 2216, 2006

Kirk, M., Chu, J., et al. Patient Planning Management System. *Medical Physics*:33, 2209, 2006.

J.C.H. Chu, X. Gong, **M. Kirk**, A. Khan, M. Rivard, C. Melhus, M. Buscher, G. Cardarelli, A. Hurley and J. Hepel. Holographic Image Guided Radiation Therapy (HIGRT) Treatment Planning: a Multi-Institutional Study
*International Journal of Radiation Oncology*Biophysics*, Volume 66, Issue 3, Supplement 1, 1 November 2006, Pages S664-S665

A. Dickler, **M. Kirk**, N. Seif, K. Griem, K. Dowlathshahi, D. Francescatti and R. Abrams. A Dosimetric Comparison of MammoSite™ HDR Brachytherapy and Xofigo™ Electronic Brachytherapy
*International Journal of Radiation Oncology*Biophysics*, Volume 66, Issue 3, Supplement 1, 1 November 2006, Page S238

Chen, S., Dickler, A., Seif, N., **Kirk, M.**, Strauss, J., Dowlathshahi, K., Solmos, G., Jokich, P., Nguyen, C., and Griem, K. Detailed Analysis of In-Breast Failure after MammoSite Brachytherapy. *International Journal of Radiation Oncology Biology and Physics*, Sup. 2006; 66(3): S227.

S. Chen , J.B. Strauss, **M.C. Kirk**, T.W. Zusag, A Novel Geometric Technique for Treatment of Locally-Advanced Non-Small Cell Lung Cancer Using Three-Dimensional Conformal Radiotherapy. *Journal of Thoracic Oncology* , vol.1, no. 8, (2006), p. 901.

Chen, S., **Kirk, M.**, Turian, J., Coogan, C., Abrams, R., and Dickler, A. Intensity Modulated Radiation Therapy Treatment of the Prostate and Pelvic Lymph Nodes with Boost to a Prostatic Nodule. *Proceedings of Prostate Cancer Symposium Abstract*, #409, 2007.

Gong, X., **Kirk, M.**, Cai, Y. Procedure for True 3D Treatment Planning and Evaluation. *Medical Physics* 2007; 34, 2485.

Kirk, M. Gong, X., Chu, J. Automating treatment planning system QA. *Medical Physics* 2007; 34,2422.

Coon, A., Ladsaria, S., **Kirk, M.**, Shah, A., Chen, S., Strauss, J., Griem, K., and Dickler, A. Multifield IMRT planning reduces cardiac and left ventricle radiation dose in left-sided breast cancer patients with unfavorable cardiac anatomy.
International Journal of Radiation Oncology Biology and Physics 2007; 69(3):S136

Shah, A., Chen, S., Strauss, J., Coon, A., Miller, C., Turian, J., **Kirk, M.**, and Dickler, A. A Dosimetric Analysis Comparing TomoTherapy and IMRT in the Treatment of Prostate Cancer. *International Journal of Radiation Oncology Biology and Physics* 2007; 69(3):S142-S143

Chen, S., Shah, A., Strauss, J., Turian, J., **Kirk, M.**, Chu, J., Dickler, A. Tomotherapy Treatment of the Prostate and Pelvic Lymph Nodes with Sequential Conedown. Analysis *International Journal of Radiation Oncology Biology and Physics* 2007; 69(3):S383.

Dickler A, **Kirk M**, Seif N, Patel MB, Bernard D, Coon A, Dowlatshahi K, Das RK, Patel RR. Dosimetric Comparison of MammoSite and ClearPath HDR Breast Brachytherapy Devices. *International Journal of Radiation Oncology Biology and Physics* 2007; 69(3):S142.

Kirk, M, Coon A, Jiang L, Bernard D, Chu J. Consequence of varying target coverage and dose heterogeneity in accelerated partial breast irradiation brachytherapy modalities on tumor control probability. *Brachytherapy* 2008;7(2):106.

Kirk M, Coon A, Dickler A, Bernard D, Zusag T. A dosimetric comparison of Xofig Axxent Electronic Brachytherapy and Ir-192 HDR interstitial brachytherapy in the treatment of cervical cancer. *Brachytherapy* 2008;7(2):153.

Dickler A, **Kirk M**, Coon A, Bernard D, Rotmensch J, Zusag T. A dosimetric comparison of Xofig Axxent Electronic Brachytherapy and iridium-192 high-dose-rate brachytherapy in the treatment of endometrial cancer. *Brachytherapy* 2008;7(2):154

Coon, AB; Liao, Y; **Kirk, MC**, et al. TomoTherapy reduces ipsilateral lung radiation doses in left-sided breast cancer patients with unfavorable cardiac anatomy compared to multifield IMRT. *Int J of Rad Onc Bio Physics* 2008;72:1 S184-S184.

Shah, AP; Strauss, JB; **Kirk, M**, et al. Toxicity associated with bowel or bladder perforation in gynecologic interstitial implants. *Int J of Rad Onc Bio Physics*. 2008;72(1):S369-S369.

Kirk M, Shah A, Coon A, Jiang L, Dickler A, Griem K. A Dosimetric Comparison of Simultaneous Integrated Breast Radiotherapy Using 3D Conformal, IMRT, and Tomotherapy Techniques. *Medical Physics* 35 2902 (2008).

Liao Y, **Kirk M**, Turian J, Bernard D, Zusag T, Chu J. Comparison of Rush University In-House Dose Optimizer and Nucletron IPSA. *Medical Physics* 35 2836(2008).

Yao R, Chu J, Liao Y, **Kirk M**, Turian J, Zusag T. Optimal Dose Grid and Sampling Resolution for HDR Interstitial Brachytherapy Planning. *Medical Physics* 35 2730 (2008).

Jiang L, Turian J, **Kirk M**, Zusag T, Chu J. Using CT Scout Images for Fletcher-Suit Brachytherapy Treatment Planning. *Medical Physics* 35 2736 (2008).

Y Ge, **M C Kirk**, Y Liao J L Coleman, J Chu. A Study of Normal Structure Contouring Efficiency with a Commercial Auto-Segmentation Software. RSNA 2008

Rosca F, **Kirk M**, Sall W, et al. A Hybrid Electron and Photon IMRT Planning Technique that Lowers Integral Patient Dose. ASTRO 2009

INVITED PRESENTATION

World Congress Faculty: 2008 World Congress of Brachytherapy
- Physics Panel Session: "What Is The Treatment Rationale for Each Modality of Partial Breast Brachytherapy Irradiation?"

PRESENTATIONS

Cosmetic Outcome and Incidence of Infection with the MammoSite Breast Brachytherapy Applicator.

- Poster Presentation ASTRO 2004.

A Dosimetric Comparison of 3D Conformal, IMRT, and MammoSite Partial Breast Radiation.

- Poster Presentation at ASTRO Annual Meeting 2005.

A Dosimetric Analysis Comparing an Electron Tumor Bed Boost with a Tumor Bed Boost Utilizing the MammoSite Breast Brachytherapy Applicator.

-Presentation at ASTRO 2005.

Analysis of the correlation between MLC file parameters and IMRT QA.

-Poster Presentation at AAPM Annual Meeting 2005.

Analysis of the correlation between MLC file parameters and IMRT QA.

-Rush University Medical Center Research Forum 2006.

Simultaneous Integrated Boost for the Treatment of Breast Cancer Utilizing IMRT.

-Rush University Medical Center Research Forum 2006.

Simultaneous Integrated Boost Utilizing IMRT for the Treatment of Breast Cancer

-Oral Presentation AAPM Annual Meeting 2006.

Patient Planning Management System

-Oral Presentation AAPM Annual Meeting 2006

A Dosimetric Comparison of Simultaneous Integrated Breast Radiotherapy Using 3D Conformal, IMRT, and Tomotherapy Techniques.

-Oral Presentation AAPM Annual Meeting 2008

Consequence of varying target coverage and dose heterogeneity in accelerated partial breast irradiation brachytherapy modalities on tumor control probability.

-Oral Presentation American Brachytherapy Society Annual Meeting 2008

SERVICE ACTIVITIES

American Board of Radiology: Performance Quality Improvement (PQI) Summit: Radiation Safety 2008.

-American Brachytherapy Society Representative.

PAPERS (publications in High Energy Particle Physics)

T. Affolder, et. al., *Double Diffraction Dissociation at the Fermilab Tevatron Collider*, Phys. Rev. Lett. 2001; 87 141802.

T. Affolder, et. al., *Measurement of $d\sigma/dM$ Forward Backward Charge Asymmetry for High Mass Drell-Yan e^+e^- Pairs from P Anti- P Collision at $\sqrt{s}=1.8$ TeV*, Phys. Rev. Lett. 2001; 87 131802.

T. Affolder, et. al., *Search for Narrow Diphoton Resonances and for $\gamma\gamma+W/Z$ in P Anti- P Collisions at $\sqrt{s}=1.8$ TeV*, Phys. Rev. D 2001; 64 092002.

T. Affolder, et. al., *Measurement of the t Anti- t Production Cross-Section in P Anti- P Collisions at $\sqrt{s}=1.8$ TeV*, Phys. Rev. D 2001; 64 032002.

M. Kirk, et. al., *An Upper Limit on the $B_s \rightarrow D_s \pi$ Branching Ratio*. CDF Note 5884 (2002).

J. Bell, et. al., *PEI Linear Power Supply Model 5010: Checkout and Modification Procedures*. CDF Note 5628 (2001).

M. Kirk, et. al., *Run II Semileptonic Trigger Study*. CDF Note 5324 (2000).

M. Kirk, et. al., *Rare b Decays at Run II CDF*. CDF Note 5279 (2000).

M. Kirk, et. al., *$B \rightarrow D \pi$ Decay*. CDF Note 5267 (2000).