CURRICULUM VITAE – Short Version

Francis D. Newman, M.S., M.S., D.A.B.R

Current Position: Associate Professor Emeritus
                      Department of Radiation Oncology,
                      University of Colorado School of Medicine – Cancer Center

Office Address: University of Colorado Health Sciences Center /Anschutz Cancer Pavilion
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UNDERGRADUATE AND GRADUATE EDUCATION:

1978	University of Colorado: B.A., History
1981	University of Colorado: B.A., Distributed Studies: Biology, Chemistry & Physics
1984	University of Colorado Health Sciences Center: M.S., Medical Physics

POSTGRADUATE EDUCATION:

1999	University of Colorado: M.S, Applied Mathematics

ACADEMIC APPOINTMENTS:

Jul 2010 – Present   Co-Director, Center for Computational and Mathematical Biology, Department of Mathematical and Statistical Sciences, University of Colorado Denver

Oct 2008 – Dec 2015   Associate Professor/Senior Physicist
                      Department of Radiation Oncology
                      University of Colorado School of Medicine – Cancer Center

2004-Oct 2008   Associate Professor/Chief Physicist, Department of Radiation Oncology, University of Colorado Denver

1995 - 2004   Assistant Professor/Chief Physicist, Department of Radiation Oncology, University of Colorado Health Sciences Center, Denver, Colorado

1991-1995	Senior Instructor/Chief Physicist, Department of Radiology, Division of Radiation Therapy, University of Colorado Health Sciences Center, Denver, Colorado

PREVIOUS APPOINTMENTS:

1991-1994	Instructor, Radiation Therapy Technology, Community College of Denver, Denver, Colorado
1990-1991	Clinical Physicist, Radiation Therapy Service Research Physicist, Nuclear Medicine Service, Fitzsimons Army Medical Center, Aurora, Colorado
1987-1990	Instructor, Department of Radiology, University of Colorado Health Sciences Center, Denver, Colorado
1985-1987	Radiation Therapy Physicist, Allan Shivers Radiation Therapy Center, Austin, Texas

PROFESSIONAL ACTIVITIES:

1997-2004	President - Three Dimensional Treatment Planning Users' Group
1991-2015	Qualified Expert, Colorado Department of Health and Environment – Radiation Division (QE# 024) Qualified Inspector, Colorado Department of Health and Environment – Radiation Division (QI# 024)

CURRENT MAJOR PROFESSIONAL SOCIETY MEMBERSHIPS:

1989 - Present	Member, American Association of Physicists in Medicine (AAPM)
1991- Present	Member, Society of Industrial and Applied Mathematics (SIAM), Activity Group in Optimization
1991- Present	Member, Society of Industrial and Applied Mathematics (SIAM), Activity Group on Control and Systems Theory

LICENSURE and BOARD CERTIFICATION:

1993	Diplomate, American Board of Radiology in Therapeutic Radiology

COMMITTEE and SERVICE RESPONSIBILITIES:

2004-2015	Graduate Committee for Master of Science Degree, Department of Mathematics, University of Colorado at Denver.

1996-1997	Responsible for functional design, shielding design and construction of expansion of Department of Radiation Oncology to incorporate one new linear accelerator vault and one new simulator vault.
1999-2001	Responsible for functional design, shielding design and construction of technical portion of Anschutz Cancer Pavilion (ACP) Department of Radiation Oncology (three linear accelerator vaults, two CT/simulator vaults, dosimetry, physics and control areas) and contributor to the ACP/Department of Radiation Oncology overall design.
1991-2008	Responsible for supervision of entire technical operation of Department of Radiation Oncology.

EDITORIAL BOARDS OR REFEREE:

1998	*Principles and Practice of Radiation Therapy: Practical Applications*, Charles Washington, Dennis Leavitt eds., Mosby Year Book/Doody Publishers.
2004	Guest Editor, Optimization in Technology and Engineering, Special Issue on Optimization and Radiation Oncology
2002-2004	Referee, IEEE- Transactions on Biomedical Engineering
2003-2004	Referee, Medical Physics
2008-2009	Associate Editor, Medical Physics
2010	Referee, Fuzzy Sets and Systems

INVITED TALKS AND LECTURES:

Automated Lesion Detection and Quantitation Using Autoassociative Memory, Informatique, European Congress of Radiology, Vienna, Austria, September, 1991.

Radiotherapy Treatment Plan Optimization Derived from Goal Programming, Computerized Medical Systems, Inc. Users' Symposium, 1996.

Automated Lesion Detection Using Artificial Neural Networks, University of Colorado at Denver, Department of Mathematics, Colloquium Lecture, 1998

Radiation Oncology and Radiology, Centennial Area Health Education Center – Celebrating Excellence in Radiology, Greeley, CO 1998.

Optimization in Radiotherapy, Regional Physics and Dosimetry Meeting, Denver, 1999

A Linear Programming Approach to Treatment Plan Optimization, University of Colorado at Boulder, Leeds School of Business, Lecture (Professor: Fred Glover), 1999

A Commercial Linear Program that Optimizes the Treatment of Tumors Using Particle Beams. Invited Presentation, International Symposium on Mathematical Programming, Atlanta, GA, August, 2000.

IMRT: Theory and Practice, Invited lecture, Community College of Denver, Dosimetry Training Course, February 2004.

Image Fusion Using Mutual Information, University of Colorado at Denver, Department of Computer Science and Engineering, Lecture (Professor: Ann Scherzinger), 2004

Image Guidance and Registration in Radiation Oncology, Institute for Operations Research and Management Science (INFORMS) Annual National Meeting, Denver, CO 2004

Image Guided Radiotherapy and 4D Radiotherapy, Regional Meeting for the American Association of Medical Physicists, Denver CO, 2006.

Partial Breast Irradiation, Computerized Medical Systems Inc. (CMS Inc.) Users Symposium, St. Louis, MO, 2006

Image Guided Radiotherapy and 4D Radiotherapy, Medical Dosimetrist and Radiation Therapist Conference, Denver CO, 2006.

A Linear Programming Model and Solution for Radiation Shielding Design of Radiotherapy Treatment Vaults, UCDHSC Operations Research Seminar, Denver CO, 2007

Duality and the Radiotherapy Optimization Problem, Advanced Linear Programming, Department of Mathematics, UCDHSC, Denver CO, 2007.

TEACHING RECORD and ACADEMIC ACTIVITIES:

Principal Advisor:	23 Graduate Students, 1991-2002
Course Instructor- Graduate School:	Radiation Therapy Physics I
	Radiation Therapy Physics II
	Radiation Therapy Physics III
	Radiation Therapy Physics IV
	Artificial Neural Networks in Radiation Oncology and Radiology
	Optimization Theory and Methods in Radiation Oncology and Medical Imaging
	Clinical Rotations

Course Instructor	Physics of Radiation Therapy, Community College of Denver, 1989-1992
Course Instructor	Trigonometry, University of Colorado Denver Department of Applied Mathematics, Spring 1997.
Course Director/Instructor	Physics of Radiation Therapy, Residency Program in Radiation Oncology, University of Colorado Health Sciences Center, Department of Radiation Oncology 2004- Present
Co-Instructor	The Mathematics of Medical Imaging, University of Colorado Denver, Department of Mathematical and Statistical Sciences, Spring 2005.
Co-Instructor and Sponsor	Math Clinic – Artificial Neural Networks, Support Vector Machines and Fuzzy Systems Applied to Medical Imaging and Radiation Oncology – University of Colorado Denver, Department of Mathematical and Statistical Sciences, Fall 2008/Spring 2009/Spring 2010
Graduate Student Advisor, 2013	De facto primary graduate student advisor for Master of Science student in Department of Mathematical and Statistical Sciences (Math faculty advisor was on sabbatical). Project was automatic detection of cystic fibrosis versus normal lung in CT images.

Committee Member for Master's Degree in Integrated Studies (MIS)
University of Colorado Denver - 2018

Brief Description of Courses Conducted by Francis Newman in the Radiological Sciences Graduate Student Program:

Radiation Therapy Physics I – Teletherapy (time/monitor unit) calculations, brachytherapy calculations, irregular field calculations, manual isodose calculations, gap and surface irregularities, beam modifiers (References: Johns and Cunningham, Khan, notes)

Radiation Therapy Physics II – Heterogeneity calculations (e.g., RTAR, ETAR, Power law) photon computer algorithms: empirical (e.g. Bentley-Milan), semi-empirical (e.g. Clarkson), model based (e.g. convolution, Monte Carlo), electron computer algorithms (pencil beam, AET, CET), brachytherapy algorithms (Sievert integral, Paris, Paterson-Parker, Quimby systems), sealed source dosimetry, TLD physics. (References: Johns and Cunningham, Khan Godden, McCinlay, journal articles)

Radiation Therapy Physics III - Ionizing radiation and the quantities describing interactions with matter, charged particle and radiation equilibrium, charged particle interactions in matter, cavity theory, radiation dosimetry, dosimetry calibration protocols, neutron interactions and dosimetry (References: Attix, journal articles)

Radiation Therapy Physics IV – Cobalt machines, Linear Accelerators, waveguides, beam optics, magnetrons, klystrons, monitor chambers, flattening filters, scattering foils. (References: Altschuler et al.)

Artificial Neural Networks in Radiation Oncology and Radiology – Lesion detection and pattern recognition in medical images. (References: Hagan et al, journal articles)

Optimization Theory and Methods in Radiation Oncology and Medical Imaging – Inverse planning (LP, NLP, Heuristic methods, e.g. simulated annealing, genetic algorithms), optimization in image segmentation. (References: Sofer and Nash, journal articles)

Clinical Rotations - All aspects of clinical practice, QA, calibrations. (References: Therapists, Dosimetrists, Clinicians, Physicists, Khan, journal articles).

GRANTS, CONTRACTS, AND AWARDS:

1988-1990	$110000	Phillips Cardiac Catheterization Laboratory Research Agreement Principal Investigator: R. E. Hendrick, Ph.D. Co-Investigator: Francis Newman, M.S.
1990	$34000	Clinical Physics Service for Fitzsimons Army Medical Center, Radiation Oncology Service.
1992-1993	$9740	"Optimization of Teletherapy Beams using Heteroassociative Recall". Department of Radiology, University of Colorado Health Sciences Center, Academic Enrichment Fund Seed Grant Principal Investigators: Charles Leonard, M.D. and Francis Newman, M.S.
1992-1997	$15000/yr	Clinical and Academic Service Lutheran Medical Center, Radiation Oncology Principle Contract: Francis Newman, M.S. Co-Contract: Harold Cline, M.S.
1993-1994	$5200	Specification of the Quality of Bremsstrahlung Photons Emitted by Cerrobend Targets in Electron Beam Therapy, Academic Enrichment Fund Seed Grant

Principal Investigators: Deborah Waitz, M.D., and Francis Newman, M.S. Department of Radiology, University of Colorado Health Sciences Center.

1994-1995	$75000	Three Dimensional Treatment Planning System, FOCUS Beta Site (Hardware/ Coordinator, Computerized Medical Systems, Inc., Verification of Software) Dose Computation Algorithm (Clarkson).
1995-1996	$54000	Software Development of Functionality for The Three Dimensional Treatment Planning System, FOCUS Computerized Medical Systems Inc., St. Louis, MO, 1995
1996-1997	$52000	Inverse Planning and Auto-Segmentation Development, Computerized Medical Systems, Inc. Co-Investigator: Stephen M. Humphries, M.S.
1997-1998	$55000	Clinical Service Lutheran Medical Center, Radiation Oncology
1998-1999	$26500	Conventional Inverse Planning Development, Computerized Medical Systems, Inc., Principal Investigator: Francis Newman, M.S., Co-Investigator: Stephen L. McCourt, M.S.
1998-1999	$34000	Lutheran Medical Center, Radiation Oncology Principal Investigator: Francis Newman, M.S. Co-Investigator: Bryan Tollenaar, B.S. (Salary Support)
1998-1999	$85000 value	Conventional Inverse Planning Development, (IMRT Computerized Medical Systems, Inc., Software) Principal Investigator: Francis Newman, M.S. $27000 Co-Investigator: Stephen L. McCourt, M.S. (Salary Support)
2002-2003	$24000 value	Clinical Evaluation of IMRT (Hardware/Computerized Medical Systems Inc., Software) Principal Investigator: Francis Newman, M.S.
2008	$5000	Stent Study Funding - Alveolus
2008	$80000 value	BrainLab Monte Carlo Evaluation – Hardware and Software
2013	$2000(approx)	Funded travel for training and development of artificial adaptive systems, sponsored by Italian Ministry of Higher Education.

PUBLISHED AND PRESENTED ABSTRACTS:

Tom Nelson and Francis Newman. Fluorine Minimum Detectability in a 0.15 Tesla Whole Body MR Scanner, Scientific Paper, RSNA, November, 1984.

Francis Newman, Ulrich Raff, and Dennis Stroud. A Neural Network Approach to Radiological Lesion Detection, Works in Progress, RSNA, 1989, November, 1989.

Dennis Stroud, William Burleson and Francis Newman. The Suitability of Commonly Available Inhomogeneity Corrections Algorithms for Photon Beams Passing Through High Density Prosthetic Materials, Scientific Paper, RSNA, December, 1991.

Francis Newman, Harold Cline and Charles Leonard. Generation of Automated Treatment Plans with Artificial Neural Network Theory, Scientific Paper, RSNA, November, 1993.

Francis Newman, and Harold Cline. A Neural Network for Optimizing Radiation Therapy Dosage, The International Conference on Numerical Analysis with Automatic Result Verification, February, 1993.

Jim Rankin, Francis Newman, Larry Pallas, and Charles Leonard. Beta Testing of a Commercial 3-D Treatment Planning System, Scientific Exhibit, AAPM Annual Meeting, July, 1994.

David Chavaree, Francis Newman and Charles Leonard. The Generation of Insert Factors and Depth Dose Distributions for Irregular Electron Fields, Scientific Exhibit, AAPM Annual Meeting, July, 1994.

Gayle Harnisch, Francis Newman, Harold Cline and Charles Leonard. Teletherapy Treatment Plan Optimization Using an Artificial Neural Network, Scientific Exhibit, AAPM Annual Meeting, July, 1994.

R.S. Emery and Francis Newman. Measurement of Bremsstrahlung Spectra from a Clinical Electron Beam, Scientific Exhibit, AAPM Annual Meeting, 1995.

G.J. Andl, F.D. Newman and T.K. Johnson. Spect Reconstruction Using Tabu Search, Poster Exhibit, AAPM Annual Meeting, 1995.

John Koss, Brian Berman, Harold Cline, Chris Dennett and Francis Newman. Evaluation of Heterogeneity Corrections Performed by an Electron Pencil Beam Algorithm on a Commercial 3-D Treatment Planning System, Poster Exhibit, AAPM Annual Meeting, 1995.

Sam Shen and <u>Francis Newman</u>. Commissioning a Commercial 3-D Radiotherapy Treatment Planning System for Stereotactic Radiosurgery, Poster Exhibit , AAPM Annual Meeting, 1995. Francis Newman. Commissioning Stereotactic Radiosurgery in a Commercial 3-D Treatment Planning System, Oral Presentation, Computerized Medical Systems, Inc. Users' Symposium, 1996.

<u>Francis Newman</u>, Evaluation of Heterogeneity Corrections Performed by a 3-D Pencil Beam Algorithm on a Commercial 3-D Treatment Planning System, Oral Presentation, Computerized Medical Systems, Inc. Users' Symposium, 1996.

<u>Francis Newman</u>, Time/Monitor Unit Calculator Evaluation for a Commercial 3-D Treatment Planning System, Oral Presentation, Computerized Medical Systems, Inc. Users' Symposium, 1996.

Joe Herrick and <u>Francis Newman</u>, Software Verification of a 3-D Radiation Therapy Treatment Planning System, Oral Presentation, Computerized Medical Systems, Inc. Users' Symposium, 1996.

Sasa Mutic, <u>Francis Newman</u>, and Steve Humphries. Verification of a Commercially Available Stereotactic Radiosurgery System Using a Bang-2 Polymer Gel Dosimeter and Magnetic Resonance Imaging, Oral Presentation, AAPM Annual Meeting, 1996.

Kelly Stuhr, <u>Francis Newman</u>, and Harold Cline. Radiotherapy Treatment Plan Optimization Using the Simplex Method, Poster Exhibit, AAPM Annual Meeting, 1996.

Steve Humphries, <u>Francis Newman</u>, and Harold Cline. Portal Image Verification Using an Artificial Neural Network, Fourth International Symposium on Portal Imaging, Amsterdam, The Netherlands, 1996.

Steve Humphries, <u>Francis Newman</u>, Harold Cline and Dave Taylor. Portal Image Evaluation Using a Counterpropagation Neural Network, Oral Presentation, AAPM National Meeting 1997.

Steve Humphries, <u>Francis Newman</u> and John Koss. A Multi-Architecture Connectionist Approach to Image Segmentation for Radiotherapy Planning, AAPM National Conference, 1997.

<u>Francis Newman</u>, Bryan Tollenaar, Stephen McCourt, and Stephen Humphries. Clinical Implementation of an Inverse planning System. Oral Presentation. CMS Users' Symposium. St. Louis , MO, April, 1998.

<u>Francis Newman</u> and Jeff Masten. The Law and Radiotherapy Treatment Planning. Oral Presentation. CMS Users' Symposium, St. Louis, MO, April 1998.

B. Tollenaar, <u>F. Newman</u>, S. McCourt, S. Humphries. Extension of an Inverse Planning System from Algorithm Development to Clinical Implementations., AAPM National Conference, San Antonio, TX, July 1998.

Stephen Billups and <u>Francis Newman</u>. Medical Image Segmentation. Sixth SIAM (Society for Industrial and Applied Mathematics) Conference on Optimization. May 10-12 1999, Atlanta, Georgia.

<u>Francis Newman</u>, Stephen McCourt, and Allen Holder, Optimization of Radiotherapy Treatment Plans Using a Linear Programming Model., INFORMS International Symposium, Jan.7, 2000, Cancun, Mexico.

<u>Francis Newman</u>, Maximizing DRR Quality. Oral Presentation, 3D Users Symposium, Sponsored by Computerized Medical Systems, St Louis, MO, April 2000.

<u>Francis Newman</u>, Optimizing the Inverse Planning Process. Oral Presentation, 3D Users Symposium, Sponsored by Computerized Medical Systems, St. Louis, MO, April 2000.

<u>Francis Newman</u>, Wayne Dzingle, Kelly Stuhr, Shawn Meyer, Anton Eagle. Extra-Cranial Radiosurgery Using FOCUS and Conventional Inverse Planning. 3D Users Symposium, Sponsored by Computerized Medical Systems, St. Louis, MO, April 2000.

V. Willcut, <u>F. Newman</u>, X. Zhu, D. Low, J. Percy, M. Cain, J. Markman, T. Munger, B. Nelms. Dosimetric Verification of IMRT Delivery: Varian, Siemens, and Elekta - AAPM National Conference, 2002

Kelly Stuhr, <u>Francis Newman</u>. IMRT Quality Assurance: Where to Start and When to Stop, Elekta Users Symposium, 2003

Meisong Ding, <u>Francis Newman</u>, Maria Golish, Jan Hobson, Richard Emery, Timothy Johnson, Kelly Stuhr, Laurie Gaspar. *Investigation of Heterogeneity Corrections in Lung Cancer Radiotherapy*, AAPM 2004.

Meisong Ding, Changhu Chen, <u>Francis Newman</u>, Kelly Stuhr, Timothy Johnson, Brian Kavanagh, Laurie Gaspar. Dosimetric Comparison between 3D Conformal SRT and IMRTs with Different Multileaf Colimators (Novalis m3, Varian mlc-120 and Varian mlc-80) in the Treatment of Brain Tumors, AAPM 2004.

Meisong Ding, <u>Francis Newman</u>, Kelly Stuhr, Brian Kavanagh, Tim Johnson, L:aurie Gaspar, Evaluation of Motion Effect on Lung Cancer Radiotherapy, ASTRO, 2004.

M Ding, <u>F Newman</u>, K Stuhr, T Johnson. A comparative dosimetric study of three-dimensional conformal, dynamic conformal arc, and intensity modulated radiation therapy for brain tumor treatment, AAPM, 2005.

M Ding, <u>F Newman</u>, K Stuhr. The impact of heterogeneity correction on tumor dosimetry for lung cancer stereotactic body radiation therapy. Accepted for General Poster Discussion Session, AAPM, 2005

Francis Newman, Weldon Lodwick, and Kate Bachman. Image Registration Using Fuzzy Optimization and Mutual Information. Accepted to the North American Fuzzy Information Processing Society (NAFIPS) Annual Meeting, June, 2005.

Rabinovitch R, Ballonoff A., Newman F, Arya J, Gibans L, Silverman E, and Finlayson C *Tangential Breast Irradiation Includes the Sentinel Lymph Node,*. ASTRO, 2005.

M. Ding, B. Kavanagh, T. Schefter, K. Stuhr and F. Newman. *The influence of heterogeneity corrections on tumor and normal lung dosimetry in stereotactic body radiation therapy for lung tumors*. ASTRO, 2005.

Francis Newman and Anton Eagle, *A Linear Programming Approach to the Radiation Therapy Optimization Problem Using the Simplex Algorithm and Parameterized Bounds to Avoid Infeasibility*, Institute for Operations Research and the Management Sciences (INFORMS) Optimization Society, Optimization and Health Care, San Antonio, TX, 2006.

Francis Newman, *An Adaptive Support Vector Machine for Automated Abdominal Image Segmentation*, Institute for Operations Research and the Management Sciences (INFORMS) Optimization Society, Optimization and Health Care, San Antonio, TX., 2006.

Kate Bachman and Francis Newman, *Automated Fusion of Electronic Portal Images and Digitally Reconstructed Radiographs Using Mutual Information*, Institute for Operations Research and the Management Sciences (INFORMS) Optimization Society, Optimization and Health Care, San Antonio, TX, 2006.

M. Ding, K. Stuhr, F. Newman, T. Johnson and B. Kavanagh, *Accuracy and dosimetric advantage of target localization using stereoscopic image-guided radiotherapy for lung cancer treatment*. AAPM 2006, Orlando FL

M Ding, Lei Xing and F. Newman, *Investigation of respiratory motion effect on lung tumor radiotherapy using 4D Monte Carlo treatment planning and 4D CT*. AAPM 2006, Orlando FL

Meisong Ding, Lei Xing, Weijun Xiong, Kelly Stuhr and Francis Newman , *Validation of a 4D Monte Carlo treatment planning tool using an image interpolation model*, ASTRO, 2006 Philadelphia PA

Meisong Ding, Francis Newman, Laurie Gaspar, Brian Kavanagh, Kelly Stuhr, David Raben, Jinsheng Li and Charlie Ma, A 4D treatment planning tool to evaluate motion effect on lung cancer treatments, Third McGill Workshop on Monte Carlo Techniques in Radiotherapy Delivery and Verification, Montreal, Canada, 2007.

Masoud Asadi-Zeydabadi, Francis Newman, Vikram D. Durairaj, Meisong Ding, Kelly Stuhr, Brian Kavanagh,*Visual Sensations during Megavoltage Radiotherapy to the Orbit Attributable to Cherenkov Radiation,* Oral Presentation, AAPM Annual Meeting, 2007.

Francis Newman and Masoud Asadi-Zeydabadi, *A Linear Programming Model and Solution for Radiation Shielding Design of Radiotherapy Treatment Vaults.* Poster Presentation, AAPM Annual Meeting, 2007

Yang Chen, Tracey Schefter, Francis Newman, *Esophageal Cancer Patients Undergoing External Beam Radiation after Placement of Self-Expandable Metal Stents (SEMS): Is there a Risk of Radiation Dose Enhancement?* Digestive Disease Week, San Diego, CA, May 2008.

M. Ding, F. Newman, K. Stuhr, H. Rice, A. Hu, B. D. Kavanagh, *Investigation of a New Monte Carlo and a Pencil Beam Algorithm in a Heterogeneous Thorax Phantom*, ASTRO 2008.

M. Ding, F. Newman, K. Stuhr, H. Rice, A. Hu, B. D. Kavanagh, *Validation and application of iPlan-4.0 (bate version) planning system*, 4th International Conference of the Novalis Circle, June 18–20, 2008, Santa Barbara, CA

Pugh TJ, Ballonoff A, Newman F, Rabinovitch R, *Improved Disease Specific and Overall Survival in Patients with Early Stage Low Grade Follicular Lymphoma Treated with External Beam Radiation: A Surveillance, Epidemiology, and End Results Analysis*, ASTRO 2008, clinical winner of the Poster Recognition Award for ASTRO'S 50TH Annual Meeting in Boston.

J. Larson, F. Newman, *An Implementation of Scatter Search to Classify Medical Images*, Mathematical Association of America, April 2009, Fort Collins CO

K. Witt, E. Untiedt, F. Newman, W. Lodwick, *Optimal Parameters for Neural Network Segmentation of Medical Image*, Oral Presentation, Society of Industrial and Applied Mathematics Annual Meeting 2009, Denver CO.

E. Untiedt, K. Witt, F. Newman, W. Lodwick, *Fuzzy Clustering for the Segmentation of Medical Images*, Poster Presentation, Society of Industrial and Applied Mathematics Annual Meeting 2009, Denver CO

S. Rosskamm, F. Newman, M. Miften, *A Probabilistic Neural Network using the Haralick Transform to Segment Ribs in Chest Digital Radiographs*, AAPM Annual Meeting, Oral Presentation, 2009.

F. Newman, S. Rosskamm, *Automated Differential Diagnoses of CT Images from Healthy Lung and Three Pulmonary Diseases using a Simple Statistical Transform and a Probabilistic Neural Network*, AAPM Annual Meeting, Poster Presentation, 2009.

M. Buscema, F. Newman, G. Massini, E. Grossi, W. Tastle, *Assessing Pos-Radiation Treatment Involving Brain Differences in Children: an Application of Adaptive Systems Methodology*, North American Fuzzy Information Processing Society, Toronto Canada, July 2010.

PUBLISHED ARTICLES:

Nelson, T.R., <u>Newman, F.D.</u>, Schiffer, L.M., Reith, J.D., Cameron, S.L. *Fluorine Nuclear Magnetic Resonance: Calibration and System Optimization*. <u>Magnetic Resonance Imaging</u> 3, 3:267-273, June, 1985.

Hendrick, R.E., <u>Newman, F.D.</u>, Hendee, W.R. *MR Imaging Technology: Maximizing the Signal-to-Noise Ratio from a Single Tissue*. <u>Radiology</u> 156, 3:749-752, September, 1985.

Hazuka, M., Edwards-Prasad, J., <u>Newman, F.</u>, Kinzie, J., Prasad, J. *Betacarotene Induced Morphological Differentiation and Decreases Adenylate Cyclase Activity in Melanoma Cells in Culture.* <u>J Amer Col of Nutrition</u>, April 1990.

Raff, U., <u>Newman, F.D.</u> *Lesion Detection in Radiologic Images Using an Autoassociative Paradigm: Preliminary Results.* <u>Medical Physics</u>, 17(5):926, 1990.

Raff, U., <u>Newman, F.D.</u> *Automated Lesion Detection and Quantitation Using Autoassociative Memory*, <u>Medical Physics</u> (19)1:71, 1992.

Stephen Humphries, Karen Boyd, Patti Cornish, <u>Francis Newman</u> *Comparison of Super-Stuff to paraffin wax bolus in radiation therapy of irregular surfaces,* <u>Medical Dosimetry</u>, 1996 Fall 21(3):155-157.

Weldon Lodwick, Steve McCourt, <u>Francis Newman</u>, Steve Humphries. *Optimization Methods for Radiation Therapy Plans*, University of Colorado Denver, Center for Computational <u>Mathematics Technical Report No. 114</u>, November 1997.

JE Koss, <u>FD Newman</u>, TK Johnson, DL Kirsch, *Abdominal Organ Segmentation Using Texture Transforms and a Hopfield Neural Network*, <u>IEEE Transactions in Medical Imaging</u>, 18(7):640, July, 1999.

JS Herrick, <u>FD Newman</u>, *Validation of a Photon Beam Algorithm in a 3-D Radiation Therapy Treatment Planning System*, <u>Medical Dosimetry</u>, 24(3): 179 Fall 1999.

M. Weil, A. Eagle; <u>F. Newman</u>, *2-CAT: 2 Concentric Arc Treatment*, <u>Medical Dosimetry</u>, 25(4), 243-248, 2000.

B. Kavanagh, T. Schefter,Q. Wu, S. Tong, <u>F. Newman</u>, M. Arnfield, S. Benedict, S. McCourt, R. Mohan, Clinical *Application of Intensity-Modulated Radiotherapy for Locally Advanced Cervical Cancer*. <u>Seminars in Radiation Oncology</u>, 12(3):260-271,2002

T. Schefter, B. Kavanagh Q. Wu, S. Tong, <u>F. Newman</u>, M. Arnfield, S. Benedict, S. McCourt, R. Mohan, *Technical Considerations in the Application of Intensity-Modulated Radiotherapy as a Concomitant Integrated Boost for Locally Advanced Cervical Cancer*, <u>Medical Dosimetry</u>, 27(2): 177-184, 2002.

B. Kavanagh R. Timmerman, S. Benedict, Q. Wu, T. Schefter, K. Stuhr, S. McCourt, F. Newman, R. Cardinale, L. Gaspar, *How Should We Describe the Radiobiologic Effect of Extracranial Stereotactic Radiosurgery: Equivalent Uniform Dose or Tumor Control Probability?*, Medical Physics, 30(3):321-324, 2003.

Meisong Ding, Francis Newman, Brian D Kavanagh, Kelly Stuhr, Tim K Johnson, and Laurie E Gaspar, *A comparative dosimetric study of 3-dimensional conformal, dynamic conformal arc, and intensity modulated radiation therapy for brain tumor treatment using Novalis® system*, Int J Radiat Oncol Biol Phys (2006).

Brian D Kavanagh Meisong Ding, Tracey Schefter, Kelly Stuhr and Francis Newman, *The dosimetric effect of inhomogeneity corrections in dynamic conformal arc stereotactic body radiation therapy for lung tumors*, J of Clin Appl Med Phys. (2006).

Meisong Ding, Francis Newman, Kelly Stuhr, Brian Kavanagh, Laurie Gaspar, *Dosimetric comparison between 3D-CRT and IMRT using different multileaf collimators in the treatment of brain tumors*, Medical Dosimetry, 2008.

Francis Newman, Masoud Asadi-Zeydabadi, Vikram D. Durairaj, Meisong Ding, Kelly Stuhr, Brian Kavanagh, *Visual Sensations during Radiotherapy to the Orbit Attributable to Cherenkov Radiation*, Medical Physics, 34 (1), 2008.

Francis Newman and Masoud Asadi-Zeydabadi, *A Linear Programming Model and Solution for Radiation Shielding Design of Radiotherapy Treatment Vaults*, Medical Physics, 34 (1), 2008

Brian Kavanagh, Francis Newman, Toward a Unified Survival Curve: In Regard to Park et al. (Int J Radiat Oncol Biol Phys 2008; 70:847-852 and Krueger et al. J Radiat Oncol Biol Phys 2007;69:1262-1271), Letter to the Editor, J Radiat Oncol Biol Phys 2008.

M. Ding, F. Newman, K. Stuhr, H. Rice, A. Hu, B. D. Kavanagh, *Investigation of a New Monte Carlo and a Pencil Beam Algorithm in a Heterogeneous Thorax Phantom*, Int J Radiation Oncol Biol Phys **72**:1

Thomas J. Pugh, M.D. Ari Ballonoff, M.D., Francis Newman M.S., and Rachel Rabinovitch, M.D., *Improved Survival in Patients with Early Stage Low Grade Follicular Lymphoma Treated with Radiation: A SEER Database Analysis*, Cancer.

Arthur K. Liu, Dale Thornton, Jennifer Backus, Wayne Dzingle, Scott Stoehr and Francis Newman, *Supine Craniospinal Irradiation Setup with Two Spine Fields*, Medical Dosimetry, Vol. 34, no. 3, pp. 214-216, 2009.

S Qi, A Hu, D Westerly, H Rice, F Newman, K Stuhr, C Chen, D Raben, B Kavanagh, *Initial Experience of Patient Specific Rotational Quality Assurance for VMAT Using a Cylindrical Diodes Array Detector System*, Medical Physics 37(6):3240-3240, 2010

Yang Chen, Tracey Schefter, <u>Francis Newman</u>, *Esophageal Cancer patients Undergoing External Beam Radiation after Placement of Self-Expandable Metal Stents: Is There a Risk of Radiation Dose Enhancement?*, <u>Gastrointestinal Endoscopy</u>, 2010.

Jeffrey Larson and <u>Francis Newman</u>, *An Implementation of Scatter Search to Train Neural Networks for Brain Lesion Recognition*, <u>Involve, A Journal of Mathematics</u>, *2010.*

X. Sharon Qi, A. Hu, K. Wang, <u>F. Newman</u>, J. White and X. Allen Li, *Respiration Induced Heart Motion and Indications of Gated Delivery for Left-sided Breast Irradiation,* <u>Int. J. Radiat. Phys. Biol. Phys</u>., 82(5):1605-11, 2011.

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X. Sharon Qi, Sutan Wu, <u>Francis Newman</u>, X. Allen Li, Angie Y. Hu , *Evaluation of interfraction patient setup errors for image-guided prostate and head-and-neck radiotherapy using kilovoltage cone beam and megavoltage fan beam computed tomograph*, <u>Journal of Radiotherapy in Practice</u>, 12(04), 2013.

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