Remarkable presentations from OMPI at 2011 Joint AAPM/COMP meeting

Wednesday, December 7, 2011

The 2011 Joint meeting of the AAPM and COMP was held in Vancouver BC July 31-August 4 2011. OMPI members and graduate students in our program presented or co-authored a remarkable 38 talks or posters, including 7 invited presentations.

Abstract Titles and Links

Sunday July 31st

SU-C-211-7 **Quantitative Reconstruction of Multiplexed Multi-Pinhole SPECT with Scatter and Attenuation Correction** - J Strydhorst1,2 *, R Glenn Wells1,2 , (1) University of Ottawa Heart Institute, Ottawa, ON, CA, (2) Carleton University, Ottawa, ON, CA

SU-D-BRB-1 **On the Dependence of Scanned Proton Beam Dose Output Factors On the Field Size and the Accuracy of the Lateral Dose Profiles** - U Titt1 *, D Mirkovic1 , A Anand1 , L Perles1 , G Sawakuchi2 , R Mohan1 , (1) MD Anderson Cancer Center, Houston, TX, (2) Carleton University, Ottawa, Ontario, CA

SU-E-I-187 **Coherent Scatter Ring Integration Imaging** - K Landheer1 *, P C Johns1,2 , (1) Ottawa Medical Physics Institute and Department of Physics, Carleton University, 1125 Colonel By Drive, Ottawa, Ontario, K1S 5B6, Canada (2) Department of Radiology, University of Ottawa, Canada

SU-E-T-6 **Investigating in Vitro Gamma-H2AX Response and Chromosome Damage in Human Lymphocytes and Lymphocyte Subsets for Biomarkers of Radiation Sensitivity** - LA Beaton1 *, C Ferrarotto2 , N Ringuette2 , S Malone3 , S Samiee3 , RC Wilkins2 , (1) Carleton University, Ottawa, ON, CA, (2) Health Canada, Ottawa, ON, CA, (3) Ottawa Hospital Cancer Centre, Ottawa, ON, CA,

SU-E-T-76 **Construction of a Cost-Effective and Versatile Optically Stimulated Luminescence Detector (OSLD) Reader for Research** - A Scullion1 *, E Yukihara2 , G O Sawakuchi1 ,

(1) Carleton University, Ottawa, Ontario, CA, (2) Oklahoma State University, Stillwater, OK

Making Plane-Parallel Ionization Chambers Available for Reference Dosimetry of High-Energy Photon Beams - B R Muir1 , M R McEwen2 *, D W O Rogers1 , (1) Carleton University, Ottawa, Ontario, CA, (2) National Research Council, Ottawa, ON,

SU-E-T-103 CA

Experimental Characterization of Al2O3:C Optically Stimulated Luminescence Detector (OSLD) Exposed to 6 MV X-Ray Beams - A Omotayo1 *, J Cygler2 , G O Sawakuchi1 , (1) Carleton University, Ottawa , ON, CA, (2) The Ottawa Hospital Regional

SU-E-T-106 Cancer Ctr., Ottawa, ON, CA

Quantitative Image Based Measurement of Electron Beam Spot Position - B Nyiri1,3 *, J Smale2 , L Gerig1,3,4 , (1) Ottawa Hospital Regional Cancer Centre, Ottawa, ON, CA, (2) Elekta Canada, Ottawa, On, CA, (3) Univ. of Ottawa, Faculty of Medicine, Ottawa, ON, CA, (4) Carleton Univ., Department of Physics,

SU-E-T-110 Ottawa, ON, CA,

A Phenomenological Model of the Al2O3:C Optically Stimulated Luminescence Detector (OSLD) Fading - G Sawakuchi1 *, E Yukihara2 , (1) Carleton University, Ottawa,

SU-E-T-119 Ontario, CA, (2) Oklahoma State University, Stillwater, OK

Two Dosimetric Methods of Measuring Linac Beam Spot Position - B Nyiri1,3 *, J Smale2 , L Gerig1,3,4 , (1) Ottawa Hospital Regional Cancer Centre, Ottawa, ON, CA, (2) Elekta Canada, Ottawa, ON, CA, (3) Univ. of Ottawa, Faculty of Medicine , Ottawa, ON, CA, (4) Carelton Univ., Dept of Physics, Ottawa, ON,

SU-E-T-127 CA

Results of a Survey to Assess the Current Status of In-Vivo Dosimetry in Canada - G O Sawakuchi1*, L Archambault2,3 , A Scullion1 , J E Cygler4 , (1) Carleton University, Ottawa, ON, CA,

SU-E-T-250 (2) Centre Hospitalier Universitaire de Quebec, Quebec City, QC,

CA (3) Laval University, Quebec City, QC, CA (4) The Ottawa Hospital Regional Cancer Ctr., Ottawa, ON, CA

Real-Time Measurement of Urethral Dose and Position Using a RADPOS Array During Permanent Seed Implantation for Prostate Brachytherapy - A Cherpak1,2 *, J Cygler1,2 , C E1 , G Perry1 , (1) The Ottawa Hospital Cancer Centre, Ottawa, ON,

SU-E-T-390 CA, (2) Carleton University, Ottawa, ON, CA

Patient-Specific Evaluation of the Need for Adaptive Therapy in Lung SBRT - D Owen1,2 *, A Cherpak1,3 , J Cygler1,3 , J Belec1,3 , B Clark1,3 , (1) The Ottawa Hospital Cancer Centre, Ottawa, Ontario, Canada, (2) Ottawa Hospital Research Institute, Ottawa, Ontario, Canada, (3) Carleton University, Ottawa, Ontario,

SU-E-T-565 Canada

A Dual Detector Method for Determining CyberKnife Total Scatter Factors (TSF) - J Szanto1 , E Henderson1 *, (1) The

SU-E-T-578 Ottawa Hospital Cancer Center, Ottawa, Ontario, CA,

Investigation of Target Motion for Serially Delivered TMI Treatments - DJ Fraser1 *, B Nyiri1 , L Gerig1 , (1) The Ottawa

SU-E-T-602 Hospital Cancer Centre, Ottawa, ON, CA

Feasibility Study of Radiobiological Effectiveness-Based Treatment Plan Optimization for Spot-Scanned Proton Therapy Beams - G Ciangaru1 *, N Sahoo1 , G Sawakuchi2 , X Zhu1 , R Mohan1 , M Gillin1 , (1) MD Anderson Cancer Ctr., Houston, TX,

SU-E-T-646 (2) Carleton University, Ottawa, Ontario, CA,

On the Monte Carlo Simulation of Electron Transport in the Sub-1 KeV Energy Range - RM Thomson1 *, I Kawrakow2 , (1) Carleton University, Ottawa, ON, CA, (2) Siemens AG, Heidelberg,

SU-E-T-667 DE

Clinical Implementation of a Commercial Monte Carlo Treatment Planning System for Electron Beams - E Vandervoort1 *, J Cygler1,2 , (1) The Ottawa Hospital Cancer

SU-E-T-669 Centre, Ottawa, ON, CA, (2) Carleton University, Ottawa, ON, CA

The Need for Segmentation of Breast Tissue in Monte Carlo Calculations for Low-Energy Brachytherapy - JGH Sutherland*, RM Thomson, DWO Rogers, Carleton University, Ottawa, ON, CA

SU-E-T-696

Guidance for Early Adoption of Model-Based Dose Calculation Algorithms in Brachytherapy: Progress Report From AAPM Task Group 186 - L Beaulieu1 *, Å Carlsson Tedgren2 , J Carrier3 , S Davis4 , F Mourtada5 , M Rivard6 , R Thomson7 , F Verhaegen8 , T Wareing9 , J Williamson10 , (1) Centre Hospitalier Univ de Quebec, Quebec, QC, CA, (2) Linkoping Univ, Linkoping, SE, (3) Hopital Notre-Dame du CHUM, Montreal, QC, CA, (4) University of WI-Madison/ADCL, Madison, WI, (5) UT MD Anderson Cancer Center, Bellaire, TX, (6) Tufts Medical Center, Boston, MA, (7) Carleton University, Ottawa, ON, CA, (8) Maastro clinic, Maastricht, Limburg, NL, (9) Transpire Inc, Gig Harbor, WA, (10) Virginia Commonwealth University, Richmond, VA

SU-E-T-701

Accuracy of Low Doses in Lung for Locoregional Breast Irradiation with TomoTherapy and VMAT - N Ploquin1 *, J Belec1, 2 , JM Caudrelier1 , B G Clark1, 2 , (1) The Ottawa Hospital Cancer Centre, Ottawa, ON, CA, (2) Physics Department, Carleton University, Ottawa, ON, CA

SU-E-T-824

Integrated 4D Reconstruction of Dynamic Data for Myocardial Blood Flow Measurements with Dedicated SPECT Cameras - T Humphries1 *, RG Wells2 , A Celler3 , R deKemp2 , (1) Simon Fraser University, Burnaby, BC, (2) University of Ottawa Heart Institute, Ottawa, ON, CA, (3) University of British Columbia, Vancouver, British Columbia, CA

SU-F-BRA-7

Monday August 1st

Clinical Implementation and Application of Monte Carlo Methods in Photon and Electron Dose Calculation – New Issues to Consider in Clinical Practice - N Tyagi1 *, J Cygler2 *, (1) William Beaumont Hospital, Royal Oak, MI, (2) The Ottawa Hospital Regional Cancer Ctr., Ottawa, ON, CA

MO-B-224-1

The Future of Medical Physics: Challenges and Opportunities - J Boone1 *, R Fahrig2 *, D Rogers3 *, G Starkschall4 *,

MO-C-BRA-3

P Halvorsen5 *, W Hendee6 , J Seibert7 , (1) UC Davis Medical Center, Sacramento, CA, (2) Stanford University, London, ON, CA, (3) Carleton Univ, Ottawa, ON, CA, (4) UT MD Anderson Cancer Center, Houston, TX, (5) Alliance Imaging/Alliance Oncology, Newton, MA, (6) , Rochester, MN, (7) UC Davis Medical Center, Sacramento, CA

Joint AAPM/CCPM Sympsium: The Inverse Problem in Medical Physics Training – Defining the Objectives and Finding the Solutions - P Sprawls1 , M Schmid2 , J Battista3 *, W Beckham4 *, B Clark5 *, G Frey6 *, M Herman7 *, M Mills8 *, D Wilkins5 *, (1) Sprawls Educational Foundation, Montreat, NC, (2) BC Cancer Agency-Southern Interior, Kelowna, BC, CA, (3) London Regional Cancer Program, London, ON, CA, (4) Vancouver Island Cancer Ctr., Victoria, BC, CA, (5) The Ottawa Hospital Cancer Ctr., Ottawa, ON, CA, (6) Medical Univ of South Carolina, Charleston,

MO-D-301-1 SC, (7) Mayo Clinic, Rochester, MN, (8) James Graham Brown Cancer Center, Louisville, KY

Writing and Reviewing Papers for Medical Physics - W Hendee1 *, D Rogers2 *, A Karellas3 *, P Slattery4 *, (1) , Rochester, MN, (2) Carleton Univ, Ottawa, ON, CA, (3) University

MO-F-301-1 of Massachusetts Medical School, Worcester, MA, (4) AAPM, College Park, MD

A Primary Standard for HDR Brachytherapy Calibrations -

MO-G-BRA-6 JP McCaffrey *, F Tessier and B Downton , (1) National Research Council of Canada, Ottawa, Ontario, CA

Tuesday **August 2nd**

Impact of the National Institute of Standards and Technology (NIST) On Radiation Dosimetry in Medical Physics - M Mitch1 *, M McEwen2 *, R Tosh1 *, (1) National Institute of Standards and Technology, Gaithersburg, MD, (2) National Research Council,

TU-B-224-1 Ottawa, ON, CA

TU-C-BRA-1 **Progress in Calculations of KQ for TG-51** - D Rogers1 *, (1) Carleton Univ, Ottawa, ON, CA

Calibrating the Output of a Linear Accelerator – TG-51 Updated - M McEwen1 *, (1) National Research Council, Ottawa, ON, CA

TU-C-BRA-2

Medical Physics Staffing for Radiation Treatment: A Robust Algorithm with Trans-Canada Validation - B Clark1 *, M Patterson2 , L Beaulieu3 , M Sharpe4 , L Schreiner5 , M MacPherson6 , J Van Dyk7 , J Battista7 , (1) The Ottawa Hospital Cancer Ctr., Ottawa, ON, CA, (2) Hamilton Regional Cancer Ctr., Hamilton, ON, CA, (3) Centre Hospitalier Univ de Quebec, Quebec, QC, CA, (4) Princess Margaret Hospital, Toronto, ON, CA, (5) Cancer Center of Southeastern Ontario, Kingston, ON, CA, (6) Princess Margaret Hospital, Mississauga, ON, CA, (7) London Regional Cancer Program, London, ON, CA

TU-C-BRB-7

Wednesday August 3rd

Patient Safety Improvement Through Incident Learning in Radiation Treatment - Four Years Experience - B Clark1 *, R Brown1 , J Ploquin1 , A Kind1 , L Grimard1 , P Dunscombe2 , (1) The Ottawa Hospital Cancer Ctr., Ottawa, ON, CA, (2) Tom Baker Cancer Centre, Calgary, AB, CA

WE-C-214-6

Extracting Energy Fluence Distributions of X-Rays Produced by Megavoltage Electron Beams Stopping in Thick Targets From Lateral Profiles Measured Using Ionization Chambers - C Cojocaru1 *, C Ross1 , M McEwen1 , B Faddegon2 , (1) National Research Council Canada, Ottawa, ON, CA, (2) UC San Francisco, San Francisco, CA

WE-E-BRB-3

Introduction to the AAPM Task Group No. 195 - Monte Carlo Reference Data Sets for Imaging Research - I Sechopoulos1 *, S Abboud2 , E Ali3 , A Badal2 , A Badano2 , SSJ Feng1,5 , I Kyprianou2 , M McNitt-Gray4 , E Samei6 , A Turner4 , (1) Emory University, Atlanta, GA, (2) CDRH/Food and Drug Administration, Silver Spring, MD, (3) Carleton University, Ottawa, ON, Canada, (4) UCLA School of Medicine, Los Angeles, CA, (5) Georgia Institute of Technology, Atlanta, GA, (6) Duke University Medical Center, Durham, NC

WE-G-110-6

Thursday August 4th

TH-C-BRB-10 **Scanned Proton Pencil Beam's Lateral Profile Library to Describe the Spot Dose Characteristics** - A Anand1 *, N Sahoo1 , X Zhu1 , U Titt1 , G Sawakuchi2 , Y Li1 , F Poenisch1 , R Amos1 , K Suzuki1 , G Ciangaru1 , R Mohan1 , M Gillin1 , (1) U.T.M.D.Anderson Cancer Center, Houston, TX, (2) Carleton University, Ottawa, Ontario, CA.

TH-E-BRC-3 **Monte Carlo Dosimetry for 125I Brachytherapy of Stage I Non-Small Cell Lung Carcinoma** - JGH Sutherland1 *, M Furutani2 , Y Garces2 , RM Thomson1 , (1) Carleton University, Ottawa, ON, CA, (2) Mayo Clinic, Rochester, MN

TH-E-BRC-8 **Monte Carlo Calculation of Breathing Interplay Effect and Dose Calculation Discretization Error for VMAT and TomoTherapy Stereotactic Lung Treatments** - J Belec*1 2 , N Ploquin1 , BG Clark1 2 , (1) The Ottawa Hospital Cancer Centre, Ottawa, ON, CA (2) Physics Department, Carleton University, Ottawa, ON, CA

TH-E-BRC-9 **Beyond Self-Consistency in Beam Commissioning: Determination of True Linac Spectra** - E. S. M. Ali1 *, M. R. McEwen2 and D. W. O. Rogers1, (1) Carleton University, Ottawa, ON, CA, (2) National Research Council, Ottawa, ON, CA

OMPI Student and co-author win the AAPM Best Paper Award

Wednesday, April 13, 2011

Congratulations to Bryan Muir, a PhD candidate of OMPI. One of Bryan's recent papers on the calculation of kQ factors for TG-51 has won the AAPM's 2011 Farrington-Daniels Award for the best Radiation Dosimetry paper published in Medical Physics in 2010. Here is the link to the award winning paper: **Monte Carlo calculations of kQ, the beam quality conversion factor, Medical Physics 37 (2010) 5939-5950**. This represents the 9-th time Ottawa physicists have won this award in the 37 times it has been awarded since starting in 1975.

This represents the 9-th time Ottawa physicists have won this award in the 37 times it has been awarded since starting in 1975. Ex-members of OMPI have won it one other time.

1975

Sherman, Lokan, Hutcheon, Funk, Brown and Brown

Bremsstrahlung radiators and beam filters for 25-MeV cancer therapy
1985

Rawlinson, Bielajew, Munro and Galbraith

Theoretical and experimental investigation of dose enhancement due to charge storage in electron-irradiated phantoms
1991

Faddegon, Ross and Rogers

Forward-directed bremsstrahlung of 10- to 30-MeV electrons incident on thick targets of Al and Pb
1999

Rogers

A new approach to electron beam reference dosimetry
2001

Kawrakow

Accurate condensed history Monte Carlo simulation of electron transport. I. EGSnrc, the new EGS4 version
2003

Sheikh-Bagheri and Rogers

Sensitivity of megavoltage photon beam Monte Carlo simulations to electron beam and other parameters
2007

La Russa and Rogers

An EGSnrc investigation of the PTP correction factor for ion chambers in kilovoltage x-rays
2010

Bouchard, Seuntjens, Carrier and Kawrakow

Ionization chamber gradient effects in nonstandard beam configurations
2011

Muir and Rogers

Monte Carlo calculations of kQ, the beam quality conversion factor

Ex-member of OMPI (Seuntjens)

2005

Bouchard and Seuntjens

Ionization chamber-based reference dosimetry of intensity modulated radiation beams