7th MR in RT Symposium

June 23 - 25, 2019
Delta Hotels by Marriott Toronto
Toronto, Ontario, Canada
Scientific Committee

Co-chairs:

Teo Stanescu, Princess Margaret Cancer Centre, Canada
David Jaffray, Princess Margaret Cancer Centre, Canada

Membership of the Scientific Committee:

James Balter, University of Michigan, USA
Alejandro Berlin, Princess Margaret Cancer Centre, Canada
Caroline Chung, MD Anderson Cancer Center, USA
Jennifer Croke, Princess Margaret Cancer Centre, Canada
Laura Dawson, Princess Margaret Cancer Centre, Canada
Gino Fallone, Cross Cancer Institute, Canada
Carrie Glide-Hurst, Henry Ford Health System, USA
Ali Hosni, Princess Margaret Cancer Centre, Canada
Eric Leung, Sunnybrook Odette Cancer Centre, Canada
Ives Levesque, McGill University, Canada
Gary Liney, Ingham Institute, Australia
Cynthia Ménard, Le Centre hospitalier de l'Université de Montréal, Canada
Tufve Nyholm, Umeå University, Sweden
Uwe Oelfke, The Institute of Cancer Research, UK
Lars Olson, Lund University, Sweden
Parag Parikh, Henry Ford Health System, USA
Uulke van der Heide, Netherlands Cancer Institute, Netherlands
Jihong Wang, MD Anderson Cancer Center, USA

Local Organizing Committee

Jean-Pierre Bissonnette, Princess Margaret Cancer Centre
Bridge Chugh, Sunnybrook Odette Cancer Centre
Catherine Coolens, Princess Margaret Cancer Centre
Mary Hooey, Princess Margaret Cancer Centre
Ali Hosni, Princess Margaret Cancer Centre
Brian Keller, Sunnybrook Odette Cancer Centre
Teo Stanescu, Princess Margaret Cancer Centre
Beibei Zhang, Princess Margaret Cancer Centre
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Sunday June 23, 2019

7:00-8:00    Breakfast and Registration

8:00-8:15    Welcome

8:15-9:30    MR Guidance: Current Clinical Status
Co-chairs: Laura Dawson, Chia-Lin Tseng

This session will provide current status of clinical therapeutic trials and clinical imaging trials that are open.
Panelists: Parag Parikh, Brian Keller, James Balter, Cynthia Ménard

9:30-10:30   Proffered Papers – Clinical I
Co-Chairs: Eric Leung, Peter Chung

1  MRI-Guided Focal HDR Brachytherapy as Monotherapy for Prostate Cancer: Early Feasibility and Quality of Life Results
Lisa Joseph1,2, Peter Chung1,2, Joelle Helou1,2, Andrew Bayley1,2, Charles Catton1,2, Padraig Warde1,2, Bernadeth Lao1, Alexandra Rink1, Akbar Beiki-Ardakani3. Jette Borg1, Robert Weersink1, Alejandro Berlin1,2
1 Princess Margaret Cancer Centre, Toronto, ON
2 University of Toronto, Toronto, ON

2  MRI-BASED QUANTITATIVE OXYGEN SENSORS FOR GUIDING HIGH DOSE-RATE BRACHYTHERAPY
Gregory Ekchian
Massachusetts Institute of Technology, Cambridge, MA

3  CHANGES IN APPARENT DIFFUSION COEFFICIENT (ADC) IN SERIAL WEEKLY MRI DURING RADIOTHERAPY IN PATIENTS WITH HEAD AND NECK CANCER: PRELIMINARY RESULTS FROM PREDICT-HN STUDY
Sweet Ping Ng1, Carlos Cardenas2, Houda Bahig3, Baher Elgohari2, Amy Moreno2, Shalin Shah2, Adam Garden2, Jack Phan2, G Brandon Gunn2, Steven Frank2, David Rosenthal2, William Morrison2, JiHong Wang2, Clifton Fuller2
1 Peter MacCallum Cancer Centre, Melbourne, AU
2 The University of Texas MD Anderson Cancer Center, Houston, TX
3 Centre Hospitalier de l'Université de Montréal, Montreal, QC

4  INITIAL CLINICAL EXPERIENCE USING 4D-MRI BASED MR-GUIDED ONLINE ADAPTIVE SBRT ON A HIGH FIELD MR-LINAC
Eric Paulson1, William Hall2, X. Allen Li1, Michael Straza1, Beth Erickson1, Christopher Schultz1, Nikolai Mickevicius1, XinFeng Chen1, Ergun Ahunbay1
1 Medical College of Wisconsin, Milwaukee, WI
5 CLINICAL DOSIMETRIC BENEFIT OF THE FIRST 1.5T MR-LINAC SBRT TREATMENTS OF LYMPH NODE OLIGOMETASTASES COMPARED TO CONVENTIONAL CBCT-LINAC TREATMENT
Dennis Winkel\textsuperscript{1}, Gijsbert Bol\textsuperscript{1}, Anita Werensteijn-Honingh\textsuperscript{1}, Martijn Intven\textsuperscript{1}, Wietse Eppinga\textsuperscript{1}, Jochem Hes\textsuperscript{1}, Louk Snoeren\textsuperscript{1}, Bas Raaymakers\textsuperscript{1}, Ina Jürgenliemk-Schulz\textsuperscript{1}, Petra Kroon\textsuperscript{1}
\textsuperscript{1}UMC Utrecht, Utrecht, NL

6 RAPID AND ACCURATE AUTOMATIC CONTOURING OF QUANTITATIVE DIFFUSION-WEIGHTED MRI USING A DEEP CONVOLUTIONAL NEURAL NETWORK
Oliver Gurney-Champion\textsuperscript{1}, Jennifer Kieselmann\textsuperscript{1}, Kee Wong\textsuperscript{2}, Kevin Harrington\textsuperscript{1}, Uwe Oelfke\textsuperscript{1}\textsuperscript{1}The Institute of Cancer Research and The Royal Marsden NHS Foundation Trust, London, UK

10:30-11:00 Refreshment Break/Exhibitor Showcase

11:00-12:00 Where would you see MR-Guided Radiotherapy in 2025?
Chair: David Jaffray
Panelists: Caroline Chung, Percy Lee, Daniel Zips

Advances in our ability to conform radiation dose to complex targets has emphasized the need for accurate and precise delineation and characterization of disease and normal structures throughout the course of radiotherapy. Functional and anatomical changes in these structures leads to the paradigm of adaptive radiotherapy in which improvements in outcome come from highly personalized courses of care. Magnetic resonance (MR) imaging provides uniquely sensitive characterization of patient anatomy and is an emerging source of quantitative functional imaging information. Over the past 10 years, radiotherapy has made dramatic strides in integrating MR into clinical workflows, as well as, creating remarkable hybrid systems that are capable of both high performance MR imaging and delivering highly conformal radiation therapy dose distributions. Given the impressive pace, it has been suggested that all of radiotherapy will one day be guided by MR imaging. In this symposium, leaders in the field of image-guided radiotherapy will present their vision for the future of MR in radiotherapy followed by a panel discussion of the promise for patient care and the challenges to clinical realization.

12:00-13:00 Lunch

13:00-14:00 Proffered Papers – Clinical II
Co-Chairs: David Shultz, Ali Hosni

7 IMPLEMENTATION OF MRI-ONLY PLANNING AND TREATMENT FOR ACCELERATED PARTIAL BREAST IRRADIATION
Areti Marko, H Michael Gach, Olga Green, Imran Zoberi, Maria Thomas, Justin Park
Washington University in St. Louis-School of Medicine, Saint Louis, MO
8 TUMOUR DYNAMICS ASSESSMENT AND MACHINE LEARNING BASED CONTOUR PROPAGATION FOR POST-OPERATIVE MRI BASED ADAPTIVE GliOBLASTOMA RADIOTHERAPY
James Stewart, Sten Myrehaug, Young Lee, Chia-Lin Tseng, Hany Soliman, Jason Xie, Mikki Campbell, Angus Lau, Arjun Sahgal, Mark Ruschin
Sunnybrook Odette Cancer Centre, Toronto, ON

9 MULTI-MODALITY DEFORMABLE IMAGE REGISTRATION FOR EXTERNAL-BEAM RADIOTHERAPY AND BRACHYTHERAPY DOSE ACCUMULATION
Aran Kim¹, Michelle Tremblay¹, Stina Svensson², Minna Wedenberg², Peter Chung¹, Tim Craig¹, Tony Tadic¹, Alejandro Berlin¹, Michael Velec¹
¹Princess Margaret Cancer Centre, Toronto, ON
²RaySearch Laboratories, Stockholm, SE

11 CARDIAC MRI LEFT VENTRICULAR MAPPING OF LEFT-SIDED BREAST CANCER PATIENTS TREATED WITH TANGENTIAL RADIOTHERAPY ALONE
Simon Tang¹, James Otton¹, Eng-Siew Koh¹, Robba Rai¹, Geoffrey Delaney¹, David Tran¹, Liza Thomas², Lois Holloway², Gary Liney¹
¹University of New South Wales Kensington, Sydney, AU
²University of Sydney, Sydney, AU

12 PRETREATMENT ADC SHOWS NO ADDED VALUE FOR THE PREDICTION OF LOCAL RECURRENCES IN HEAD AND NECK SQUAMOUS CELL CARCINOMA
Marielle EP Philippens, Juliette Driessen, Jeanine Vasmel, Remco de Bree, Chris HJ Terhaard
University Medical Center Utrecht, Utrecht, NL

45 QUALITY ASSURANCE OF A COMPRESSED SENSING T2 MAPPING SEQUENCE FOR MULTIPARAMETRIC MRI IN PROSTATE CANCER
Yu-Feng Wang¹, Gary Liney², Robba Rai², Lois Holloway², Annette Haworth¹
¹University of Sydney, Sydney, AU
²Ingham Institute for Applied Medical Research, Sydney, AU

14:00-14:35 Proffered Papers (Clinical 1 Rapid Fire)
Chair: Catherine Coolens

13 CARDIAC SUBSTRUCTURE SEGMENTATION WITH DEEP LEARNING FOR IMPROVED CARDIAC SPARING
Eric Morris¹, Ahmed Ghanem¹, Ming Dong², Hajar Emami², Milan Pantelic¹, Eleanor Walker³, Carri Glide-Hurst¹
¹Henry Ford Cancer Institute, Detroit, MI
²Wayne State University, Detroit, MI
14 CLINICAL EVALUATION OF A PROTOTYPE RECEIVER COIL CUSTOM DESIGNED FOR MR SIMULATION OF IMMOBILIZED PATIENTS
James Balter, Dinank Gupta, Michelle Kim, James Hayman, Karen Vineberg, Yue Cao
University of Michigan, Ann Arbor, MI

15 LUNG VOLUME EFFECT ON THORACIC CT-MR DEFORMATION IN MR-GUIDED RADIOTHERAPY (MRGRT) WITH A SWINE MODEL
Kathryn Mittauer, Mattison Flakus, Antonia Wuschner, Jessica Miller, Michael Lawless, Michael Bassetti, Jennifer Meudt, Dhanansayan Shanmuganayagam, John Bayouth
University of Wisconsin, Madison, WI

16 CROSS-MODALITY DEEP LEARNING: CONTOURING OF MRI DATA FROM ANNOTATED CTS ONLY
Jennifer Kieselmann¹, Oliver Gurney-Champion¹, Brian Hin¹, Simeon Nill¹, Clifton Fuller², Uwe Oelfke¹
¹The Institute of Cancer Research and The Royal Marsden NHS Foundation, London, UK
²MD Anderson Cancer Center, Houston, TX

17 THE EFFECT OF MAGNETIC FIELD ON DOSE DISTRIBUTION OF HDR CO-60 AND IR-192 SOURCES
Hassan Ali Nedaie
Tehran University of Medical Sciences, Tehran, IR

18 IMPLEMENTING AN ADAPTIVE MRI GUIDED RADIATION THERAPY PROGRAM USING A PHANTOM AND VOLUNTEERS
Eenas Omari, John Roeske, Tamer Refaat, Anil Sethi
Loyola University Chicago, Maywood, IL

14:35-15:05 Refreshment Break/Exhibitor Showcase

15:05-15:40 Proffered Papers (Clinical II Rapid Fire)
Chair: Robba Rai, Yu-Feng Wang

19 TREATMENT RESPONSE ON MR DURING RADIOTHERAPY IN PATIENTS WITH HEAD AND NECK SQUAMOUS CELL CARCINOMA
Boris Peltenburg, Marielle Philippens, Remco de Bree, Chris Terhaard
University Medical Centre Utrecht, Utrecht, NL
AN IPEM INTERNATIONAL AUDIT OF MRI USE FOR EXTERNAL BEAM RADIOTHERAPY TREATMENT PLANNING
Richard Speight¹, Maria A. Schmidt², Gary Liney³, Robert Johnstone⁴, Cynthia L Eccles⁵, Michael Dubec⁵, Ben George⁶, Ann Henry¹, Tufve Nyholm⁷, Faisal Mahmood⁸, Juha Korhonen Kymenlaakso⁹, Rick Sims¹⁰, Rob H.N. Tijssen¹¹, Hazel McCallum¹²
¹Leeds Teaching Hospitals NHS Trust, Leeds, UK
²Royal Marsden NHS Foundation Trust and Institute of Cancer Research, London, UK
³Ingham Institute for Applied Medical Research & Liverpool Hospital, Sydney, AU
⁴Guy's and St. Thomas' NHS Foundation Trust, London, UK
⁵The Christie NHS Foundation, University of Manchester, Manchester, UK
⁶University of Oxford, Oxford, UK
⁷Umeå University, Umeå, SE
⁸Odense University Hospital and University of Southern Denmark, Odense, GER
⁹Central Hospital and Aalto University, Kotka, FI
¹⁰Auckland Radiation Oncology, Auckland, NZ
¹¹University Medical Center Utrecht, Utrecht, NL
¹²Newcastle upon Tyne Hospitals NHS Foundation Trust, Newcastle, UK

A DOSIMETRIC STUDY OF MR-DIRECTED SIMULTANEOUS INTEGRATED BOOST TO INTRAPROSTATIC GTV USING STEREOTACTIC BODY RADIOTHERAPY IN LOCALIZED PROSTATE CANCER
Astrid Billfalk-Kelly, Ning-Ning Lu, Vickie Kong, Alejandro Berlin, Tim Craig, Joelle Helou, Peter Chung
University of Toronto, Toronto, ON

DOSIMETRIC FEASIBILITY OF AN MR-LINAC SYSTEM FOR IMAGE-GUIDED CRANIAL RADIOSURGERY
Jochen Cammin¹, Gage Redler², Martha Malin², Tynan Stevens², Olga Green¹, Sasa Matic¹, Bulent Aydogan²
¹Washington University in St. Louis, St. Louis, MO
²University of Chicago, Chicago, IL

DEFORMABLE DOSE RECONSTRUCTION FOR A HYBRID CONE BEAM CT-MRI GUIDED ADAPTIVE RADIOTHERAPY WORKFLOW
Michael Velec, Tony Tadic, Jason Xie, Joanne Moseley, Tirth Patel, Michael Milosevic, Anthony Fyles, Kathy Han, Jennifer Croke
Princess Margaret Cancer Centre, Toronto, ON

DOSIMETRIC FEASIBILITY OF UTILIZING THE VIEWRAY MR-LINAC SYSTEM FOR IMAGE GUIDED SPINE SBRT
Gage Redler¹, Tynan Stevens¹, Jochen Cammin², Martha Malin¹, Olga Green¹, Sasa Matic², Bulent Aydogan¹
¹University of Chicago, Chicago, IL
²Washington University in St. Louis, St. Louis, MO
15:40-17:00 Will MR-Guided RT Reinvent Radiotherapy  
Co-Chairs: Uulke van der Heide, Caroline Chung  
Panelists: David Jaffray, Uwe Oelfke, Alejandro Berlin, Cynthia Ménard  

17:00-18:00 Poster Viewing Session  

19:00 Welcome Reception – The Fifth, 225 Richmond St. W., www.thefifth.com  

Monday June 24, 2019  

7:00-8:00 Breakfast and Registration  

8:00-9:00 Industry Sponsors (Platinum Level) Symposium  
Co-Chairs: Teo Stanescu, Warren Foltz  

Potentials of on-board MRI: The UCLA Experience  
ViewRay - Yingli Yang  

Sunnybrook Odette Cancer Centre’s Vision for MR in RT with Elekta Unity  
Elekta - Chia-Lin Tseng  

9:00-10:45 Proffered Papers – Reviewer’s Choice  
Co-Chairs: Jean-Pierre Bissonnette, Michael Milosevic  

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ON THE DEVELOPMENT OF REFERENCE DOSIMETRY SERVICE IN MRI GUIDED RADIOTHERAPY  
Ilias Billas¹, Hugo Bouchard², Uwe Oelfke³, Simon Duane¹  
¹National Physical Laboratory, Teddington, UK  
²Université de Montréal, Montreal, QC  
³The Institute of Cancer Research, Sutton, National Physical Laboratory, Teddington, UK  

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PRE-TRAINED RECURRENT INference MACHINees FOR RECONSTRUCTING DATA FROM THE MR-LINAC  
Kai Lønning¹, Tessa Lindt¹, Matthan Caan², Jan-Jakob Sonke³  
¹Dutch Cancer Institute, Amsterdam, NL  
²Universitair Medische Centra, Amsterdam, NL  
³The Netherlands Cancer Institute, Amsterdam, NL  

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QUANTIFYING THE VARIABILITY OF RESPIRATORY MOTION USING MULTIPHASIC 4D-MRI  
Martin Fast, Tessa van de Lindt, Georgios Sotiropoulos, Christoph Schneider, Jan-Jakob Sonke  
The Netherlands Cancer Institute, Amsterdam, NL  

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MAGNETIC RESONANCE SIGNATURE MATCHING (MRSIGMA) FOR REAL-TIME VOLUMETRIC MOTION TRACKING  
Li Feng, Ricardo Otazo  
Memorial Sloan Kettering Cancer Center, New York, NY
THE INFLUENCE OF THE LINEAR ACCELERATOR OF A 1.5T MR-LINAC ON DIFFUSION IMAGING DURING RADIATION TREATMENT
Ernst Kooreman, Petra van Houdt, Vivian van Pelt, Marlies Nowee, Uulke van der Heide
The Netherlands Cancer Institute, Amsterdam, NL

QUANTITATIVE IMAGING FOR PREDICTION OF LOCAL, REGIONAL AND DISTANT FAILURE IN LOCALLY ADVANCED HEAD AND NECK CANCERS
Yue Cao, Madhava Aryal, Peter Hawkins, Choonik Lee, Pin Li, Matt Schipper, Christina Chapman, Dawn Owen, Alek Dragovic, Michelle Mierzwa
University of Michigan, Ann Arbor, MI

QUANTIFYING THE EFFECTS OF RESPIRATORY VARIABILITY ON 4D-MRI GUIDED MID-POSITION LIVER SBRT
Tessa van de Lindt, Martin Fast, Jochem Kaas, Wouter van den Wollenberg, Uulke van der Heide, Jan-Jakob Sonke
Netherlands Cancer Institute - Antoni van Leeuwenhoek Ziekenhuis, Amsterdam, NL

SPATIAL ACCURACY, TEMPORAL EFFICIENCY, AND REPEATABILITY OF SELF-DIRECTED BREATH HOLD DURING MRI-GUIDED GATED RADIATION THERAPY
John Bayouth, Kathryn Mittauer, Patrick Hill, Eric Wallat, Andrew Baschnagel, Michael Bassetti
University of Wisconsin - Madison, Madison, WI

PROTON PENCIL BEAM SCANNING IN AN MRI SCANNER: MODELLING AND EXPERIMENTAL VERIFICATION
Brad Oborn\textsuperscript{1}, Sebastian Gantz\textsuperscript{2}, Sonja Schellhammer\textsuperscript{2}, Armin Luehr\textsuperscript{3}, Julien Smeets\textsuperscript{4}, Aswin Hoffmann\textsuperscript{2}
\textsuperscript{1}University of Wollongong, Wollongong, NSW
\textsuperscript{2}OncoRay - National Center for Radiation Research in Oncology, Dresden, DE
\textsuperscript{3}Helmholtz-Zentrum Dresden-Rossendorf, Dresden, DE
\textsuperscript{4}Ion Beam Applications, Louvain la-Neuve, BE

AUTOMATED MRI-ONLY TREATMENT PLANNING USING DATA AUGMENTATION AND DEEP AUTOENCODER SIMILARITY MATCHING
Michael Lempart\textsuperscript{1}, Niklas Eliasson\textsuperscript{2}, Hunor Benedek\textsuperscript{1,2}, Christian Gustafsson\textsuperscript{1,2}, Lars E. Olsson\textsuperscript{2}
\textsuperscript{1}Skåne University Hospital, Lund, SE
\textsuperscript{2}Lund University, Lund, SE
11:15-12:15  MR-Driven Ecosystem  
Chair: Lars Olsson  
Panelists: Jihong Wang, Lauren Henke, Cynthia Eccles

12:15-13:15  Lunch

13:15-14:15  Proffered Papers – MRI-only Treatment Planning  
Chair: Tufve Nyholm, N. Tyagi

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A NOVEL AND RAPID APPROACH TO ESTIMATE PATIENT-SPECIFIC DISTORTIONS BASED ON MDIXON MRI  
Steffen Weiss¹, Siamak Nejad-Davarani², Holger Eggers¹, Eliza Orasanu¹, Steffen Renisch¹, Carri Glide-Hurst²  
¹Philips Research, Hamburg, GER  
²Henry Ford Health Cancer Institute, Detroit, MI

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A MULTI-INSTITUTIONAL ANALYSIS OF A GENERAL PELVIS CONTINUOUS HOUNSFIELD UNIT (HU) SYNTHETIC CT SOFTWARE  
Neelam Tyagi¹, Jani Keyrilainen², Ilyes Benslimane³, Petra J Van Houdt⁴, Marloes N.J. Frantzen-Steneker⁵, Mo Kadbi⁵, Aleksi Halkoa⁵, Gerald Schubert⁵, Uulke A Van der Heide⁴  
¹Memorial Sloan Kettering Cancer Center, New York, NY  
²Turku University Hospital, Turku, FI  
³Columbia university, New York, NY  
⁴Netherlands Cancer Institute, Amsterdam, NL  
⁵Philips Healthcare, Gainesville, FL

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RAPID BRAIN AND PELVIS SYNTHETIC CT USING GENERATIVE ADVERSARIAL NETWORKS  
Ming Dong², Siamak Nejad-Davarani¹, Carri Glide-Hurst¹  
¹Henry Ford Health System, Detroit, MI  
²Wayne State University, Detroit, MI

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DOSIMETRIC MODELLING OF THE COUCH AND COIL STRUCTURES FOR UNITY MRI LINAC  
Nina Tilly¹,³, Gerhard Feist¹, Klas Marcks von Würtemberg¹, Stefan Pencea², James Dolan², Nicholas Schupp², David Tilly¹,³,⁴  
¹Elekta Instruments AB, Stockholm, SE  
²Elekta Inc. St. Louis, MO  
³Uppsala University, Uppsala, SE  
⁴Akademiska Hospital, Uppsala, SE

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MR-ONLY RADIOTHERAPY WITH MR-CBCT TREATMENT VERIFICATION FOR PROSTATE CANCER: FIRST UK CLINICAL IMPLEMENTATION  
Jonathan Wyatt, Rachel Pearson, John Frew, Serena West, Michele Wilkinson, Karen Pilling, Rachel Brooks, Dean Ainslie, Andrew McNeil, Neil Richmond, Christopher Walker Newcastle upon Tyne Hospitals NHS Foundation Trust, Newcastle upon Tyne, UK
10
PREDICTIVE VALUE OF ADC BEFORE CHEMORADIOThERAPY FOR SURVIVAL IN ESOPHAGEAL CANCER
Keiichi Jingu, Maiko Kozumi, Takaya Yamamoto, Rei Umezawa, Noriyoshi Takahashi
Tohoku University Graduate School of Medicine, Sendai, JP

14:15-14:45
Proffered Papers (Rapid Fire) – MRI for Planning
Chair: Beibei Zhang

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UNCERTAINTY IN MRI SIMULATION SCANS FOR RADIOThERAPY PLANNING: CNS AND LUNG CANCER
Monique Heinke¹, Lois Holloway², Robba Rai¹, Shalini Vinod²
¹Sydney, AU
²South Western Clinical School, University of New South Wales, Liverpool, Australia, Sydney, AU

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GEOMETRICAL ANALYSIS OF TARGET DEFINITION ON CORRECTED MR IMAGES AND ITS EFFECT ON STEREOTACTIC RADIOSURGERY TREATMENT PLANNING
Ali Fatemi, Chunli (Claus) Yang, Madhava Kanakamedala
University of Mississippi Medical Center, Jackson, MS

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IN SILICO ANALYSIS OF MR-ONLY PLANNING FOR SIMULATION-FREE MR-GUIDED SPINE SBRT
Olga Green, Soumon Rudra, Alex Price, Sasa Matic, Clifford Robinson
Washington University School of Medicine, St. Louis, MO

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ZERO TE BASED PSEUDO CT CONVERSION: TOWARD A SILENT PATIENT-FRIENDLY SOLUTION FOR BOTH HEAD AND PELVIS APPLICATIONS
Cristina Cozzini¹, Mikael Bylund², Sandeep Kaushik¹, Joakim H Jonsson², Josef A Lundman², Mathias Engström¹, Tufve Nyholm³, Florian Wiesinger¹
¹GE Healthcare, Munich, GER
²Umeå University, Umeå, SE

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THE IMPACT OF MRI GEOMETRIC DISTORTION IN STEREOTACTIC RADIOSURGERY
Ergys Subashi¹, Yang Sheng², Sharif Elguindi¹, John Kirkpatrick², Fang-Fang Yin², Yunfeng Cui²
¹Memorial Sloan Kettering Cancer Center, New York, NY
²Duke University, Durham, NC

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RATE OF MRI UTILISATION IN THE SETTING OF PATIENTS BEING TREATED WITH RADIOThERAPY IN THE CURATIVE SETTING
Simon Tang¹, Viet Do¹, Doaa Elwadia²
¹University of New South Wales, Kensington, AU
²Liverpool, AU
14:45-15:15  Refreshment Break/Exhibitor Showcase

15:15-16:25  Functional Imaging and Response Assessment  
Chair: Kâmil Uludağ  
Panelists: Yue Cao, Carri Glide-Hurst, Ives Levesque, David Fuller

16:25-17:00  Proffered Papers (Rapid Fire) – QA for MRI-Guided Radiotherapy  
Co-Chairs: Olga Green, Eenas Omari

46  INITIAL EXPERIENCE OF THE PERFORMANCE CHARACTERISTICS OF THE ELEKTA UNITY MR-LINAC  
Ian Hanson  
The Royal Marsden NHS Foundation Trust, London, UK

47  ONLINE AND OFFLINE PATIENT SPECIFIC QUALITY ASSURANCE FOR AN MR-LINAC SYSTEM  
Alex Price  
Washington University in St. Louis, St. Louis, MO

48  COMPREHENSIVE DISTORTION ASSESSMENT IN A 0.35T MR-LINAC  
Siamak Nejad-Davarani, Dongsu Du, Joshua Kim, Carri Glide-Hurst  
Henry Ford Cancer Institute, Detroit, MI

49  COMPARISON OF IMAGE DISTORTION OF 1.5 T AND 3 T MR SCANNERS WITH AN ELEKTA G-FRAME AND PINS USING A GRID PHANTOM  
Zhifei Wen, Tina Briere, Ping Hou, Dennis Mackin, R. Jason Stafford  
MD Anderson Cancer Center, Houston, TX

50  A REPEATABLE PHYSIOLOGICAL 4D DEFORMABLE MOTION PHANTOM INSERT FOR EDGE DETECTION AND TRACKING IN MR-IGRT WORKFLOWS  
Madeline Perrin¹, Nicholas Hartman¹, Kalin. I. Penev², Markus Glitzner³, Cornel Zachiu³, Enzo Barberi¹  
¹Modus Medical Devices Inc., London, ON  
²Western University, London, ON  
³University Medical Center Utrecht, Utrecht, NL
51
HARMONIC ANALYSIS METHOD BASED GEOMETRIC DISTORTION QA PHANTOM DESIGN FOR SUB-MILLIMETER ACCURACY
Enzo Barberi¹, Mike Cole¹, Teo Stanescu²
¹Modus QA, London, ON
²Princess Margaret Cancer Centre, University of Toronto, Toronto, ON

17:00-18:00
Proffered Papers – Dosimetry in Magnetic Field
Co-Chairs: Uwe Oelfke, Steven Thomas

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TOWARDS REAL-TIME HIGH RESOLUTION DOSIMETRY IN AN MRI-LINAC: PROOF OF CONCEPT
Trent Causer¹, Sarah J. Alnaghy, Natalia Roberts¹, Urszula Jelen², Bin Dong², Marco Petasecca³, Anatoly B. Rosenfeld¹, Peter Metcalfe¹, Brad M. Oborn¹
¹University of Wollongong, Wollongong, University of Wollongong, Wollongong, NSW
²Liverpool Hospital, Liverpool, UK

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CONSTRUCTION AND PERFORMANCE OF AN MR-COMPATIBLE WATER CALORIMETER
Mark D’Souza¹, Humza Nusrat¹, James Renaud², Gerrard Peterson³, Niloufar Entezari¹, Arman Sarfehnia⁴
¹Ryerson University, Toronto, ON
²National Research Council, Ottawa, ON
³Sunnybrook Health Sciences Centre, Toronto, ON
⁴University of Toronto, Toronto, ON

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SKIN DOSE MEASUREMENTS ON AN INLINE 1T MR-LINAC
Peter Metcalfe¹, Natalia Roberts¹, Elizabeth Patterson¹, Urszula Jelen², Gary Liney², Trent Causer¹, Lois Holloway³, Michael Lerch³, Anatoly Rosenfeld¹, Dean Cutajar¹, Brad Oborn¹
¹University of Wollongong, Wollongong, NSW
²Ingham Institute for Applied Medical Research, Sydney, AU

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DOSIMETRY FOR THE FIRST LIVE IRRADIATION ON THE AUSTRALIAN MRI-LINAC
Urszula Jelen¹, Bin Dong¹, Jarrad Begg², Natalia Roberts³, Hilary Byrne⁴, Tara Roberts⁵, Paul Keall⁶, Gary Liney¹
¹Ingham Institute for Applied Medical Research, Liverpool, AU
²Liverpool and Macarthur Cancer Therapy Centre, Liverpool, AU
³University of Wollongong, Wollongong, NSW
⁴University of Sydney, Sydney, AU
⁵Western Sydney University, Sydney, AU

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MAGNETIC FIELD CORRECTION FACTOR, KB, FOR A ROOS CHAMBER IN AN INLINE MRI-LINAC
Jarrad Begg, Urszula Jelen, Gary Liney, Lois Holloway
Ingham Institute for Applied Medical Research, Sydney, AU
IMPROVING MEGAVOLTAGE X-RAYS RADIOTHERAPY EFFICACY: USING THERANOSTIC GADOLINIUM-BISMUT NANOPARTICLES
Nader Riyahi Alam¹, Somayyeh Farahani¹, Soheila Haghighi², Ziyab Derakhshan¹
¹Tehran University of Medical Sciences, Tehran, IR
²Food and Drug Control Research Center, Tehran, IR

19:00  Steamwhistle Brewery – Locomotive Hall, Bay 10
255 Bremner Ave, www.steamwhistle.com

Tuesday June 25, 2019

7:00-8:00  Breakfast and Registration

8:00-9:20  Proffered Papers – QA Methods and Novel Hardware
Chair: Oliver Jäkel, Marielle Philippens

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ONLINE GEOMETRIC FIDELITY INSPECTION FOR MR-GUIDED TREATMENTS ON 1.5T MRI-LINAC: VISUALIZING THE CUMULATIVE EFFECT OF GRADIENT ERRORS AND PATIENT SPECIFIC SUSCEPTIBILITIES
Rob Tijssen¹, Robin Vos², Marielle Philippens¹, Astrid van Lier¹, Bas Raaymakers¹, Cornelis van den Berg³, Bjorn Stemkens¹
¹University Medical Center Utrecht, Utrecht, NL
²B.V., Zaltbommel, NL

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MULTI-INSTITUTIONAL MRI BENCHMARKING OF 0.35T MR-LINACS
Sebastian Klüter¹, Amish Shah², Kristian Boye³, Keith DeWyngaert⁴, Anthony Doemer⁵, Pierre Fau⁶, Olga Green⁷, Gökrem Güngör⁸, Alonso Gutierrez⁹, Daan Hoffmans¹⁰, Hugues Mailleux⁵, Kathryn Mittauer¹¹, Enas Omari¹², Miguel A. Palacios¹³, Ryan Pennell⁴, Tino Romaguera⁹, Anil Sethi¹², Poonam Yadav¹¹, Maria Bellon¹³, Rajiv Lotey¹³, Carri Glide-Hurst⁵
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²UF Health Cancer Center at Orlando Health, Orlando, FL
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⁴New York Presbytarian Hospital, New York, NY
⁵Henry Ford Health System, Detroit, MI
⁶Institut Paoli-Calmettes, Marseille, FR
⁷Washington University in St. Louis, St. Louis, MO
⁸Acibadem Mehmet Ali Aydinlar University, Istanbul, TR
⁹Miami Cancer Institute, Miami, FL
¹⁰Amsterdam University Medical Center, Amsterdam, NL
¹¹University of Wisconsin, Madison, WI
¹²Loyola University Chicago, Maywood, IL
¹³Viewray Inc., Mountain View, CA
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USABILITY OF RADIOLUCENT MRI-GUIDED RADIOTHERAPY RECEIVE ARRAYS IN HYBRID PET/MRI SYSTEMS
Stefan Zijlema, Woutjan Branderhorst, Luca van Dijk, Rob Tijssen, Jan Lagendijk, Dennis Klomp, Hugo de Jong, Nico van den Berg
University Medical Center Utrecht, Utrecht, NL

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EVALUATING THE ACCURACY OF MR IMAGES GEOMETRICAL DISTORTION CORRECTION FOR INTRACRANIAL BRAIN TUMORS RADIOTHERAPY
Ali Fatemi, Chunli (Claus) Yang, Madhava Kanakamedala
University of Mississippi Medical Center, Jackson, MS

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FIRST PROOF-OF-CONCEPT DELIVERY OF INTENSITY MODULATED ARC THERAPY ON THE ELEKTA UNITY MR-LINAC
Charis Kontaxis, Peter Woodhead, Gijsbert Bol, Jan Lagendijk, Bas Raaymakers
University Medical Center Utrecht, Utrecht, NL

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A MASK-COMPATIBLE, RADIOLUCENT HEAD AND NECK RECEIVE ARRAY FOR MRI-GUIDED RADIOTHERAPY TREATMENTS AND PRE-TREATMENT SIMULATION
Stefan Zijlema¹, Luca van Dijk¹, Lovisa Westlund Gotby², Michel Italiaander², Rob Tijssen³, Jan Lagendijk¹, Nico van den Berg¹
¹University Medical Center Utrecht, Utrecht, NL
²MR Coils, Zaltbommel, NL

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MR-ONLY RADIATION THERAPY: A NOVEL LIGHT-WEIGHT, FLEXIBLE COIL FOR HEAD AND NECK
Cristina Cozzini¹, Chad Bobb², Mathias Engström³, Sandeep Kaushik⁴, Molthen Robert², Dan Rettmann⁵, Venkat Goruganti⁶, Wen-Yang Chiang⁶, Florian Wiesinger¹
¹GE Healthcare, Munich, GER
²GE Healthcare, Waukesha, WI
³GE Healthcare, Stockholm, SE
⁴GE Healthcare, Bangalore, IN
⁵GE Healthcare, Rochester, MN
⁶MR Coils, Pewaukee, WI

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INVESTIGATING THE EFFECTS OF A MAGNETIC FIELD ON THE ARCCHECK-MR ARRAY CALIBRATION
Alex Price
Washington University in St. Louis, St. Louis, MO
9:20-10:20  Proffered Papers – Data Modelling for Motion and Planning  
Chair: Jan Lagendijk, Martin Fast

66  EVALUATING CONDITIONAL GENERATIVE ADVERSARIAL NETWORK MODELS FOR HEAD AND NECK MR-ONLY RADIOTHERAPY TREATMENT PLANNING
Peter Klages, Ilyes Benslimane, Sadegh Riyahi, Jue Jiang, Margie Hunt, Joseph O. Deasy, Harini Veeraraghavan, Neelam Tyagi  
Memorial Sloan Kettering Cancer Center, New York, NY

67  GEOMETRICAL ANALYSIS OF INTERFRACTIONAL CHANGES OF INTERNAL TARGET VOLUMES USING REAL-TIME 4D-MRI OF MOVING LUNG TUMORS
Moritz Rabe¹, Mathias Dübsberg², Christian Thieke¹, Sebastian Neppl¹, Sabine Gerum¹, Michael Reiner¹, Nils Henrik Nicolay³, Heinz-Peter Schlemmer⁴, Jürgen Debù⁵, Julien Dinkel¹, Guillaume Landry¹, Katia Parodi¹, Claus Belka¹, Christopher Kurz¹, Florian Kamp¹  
¹University Hospital, LMU Munich, Munich, GER  
²Klinikum rechts der Isar, Technical University, Munich, GER  
³University Hospital of Freiburg, Freiburg, GER  
⁴German Cancer Research Center, Heidelberg, GER  
⁵University Hospital of Heidelberg, Heidelberg, GER

68  STREAMLINING MR SIMULATION USING SENSE PARALLEL IMAGING ACCELERATION COMBINED WITH COMPRESSED SENSING
Neelam Tyagi  
Memorial Sloan Kettering Cancer Center, New York, NY

70  RECONSOCKET: A LOW-LATENCY DATA STREAMING SOLUTION FOR REAL-TIME MRI-GUIDED RADIOTHERAPY
Pim Borman, Bas Raaymakers, Markus Glitzner  
UMC Utrecht, Utrecht, NL

69  REAL-TIME SLIDING WINDOW RECONSTRUCTION OF GOLDEN ANGLE STACK-OF-STARS ACQUISITION FOR CONTINUOUS 3D TUMOR TRAILING
Tom Bruijnen, Pim TS Borman, Jan JW Lagendijk, Bas W Raaymakers, Cornelis AT van den Berg, Markus Glitzner, Rob HN Tijssen  
University Medical Center Utrecht, Utrecht, NL

71  DEEP LEARNING BASED AUTO-SEGMENTATION OF TARGETS AND OARS FOR MR-ONLY PLANNING OF PROSTATE RADIOTHERAPY
Sharif Elguindi, Michael Zelefsky, Jue Jiang, Harini Veeraraghavan, Joseph Deasy, Margie Hunt, Neelam Tyagi  
Memorial Sloan-Kettering Cancer Center, New York, NY

10:20-10:50  Refreshment Break/Exhibitor Showcase
10:50-12:00 AI in RT (Micro-symposium)
Chair: Teo Stanescu

Thomas Purdie
Chris McIntosh

12:00-12:35 Proffered Papers (Rapid Fire) – Deep Learning Applications
Chair: Chris McIntosh, Jennifer Kieselmann

72 APPLICATION OF A CONVOLUTION MODEL TO CORRECT FOR THE INFLUENCE OF MAGNETIC FIELDS ON MEASURED TRANSVERSE SIGNAL PROFILES
Ann-Britt Ulrichs, Björn Delfs, Louisa Bretschneider, Björn Poppe, Hui Khee Looe
Carl-von-Ossietzky University of Oldenburg, Oldenburg, GER

73 A CONVOLUTIONAL NEURAL NETWORK WITH ACGAN AUGMENTED DATA FOR TREATMENT RESPONSE PREDICTION USING LONGITUDINAL DIFFUSION MRI
Yu Gao, Vahid Ghodrati, Anusha Kalbasi, Jie Fu, Dan Ruan, Minsong Cao, Chenyang Wang, Fritz Elber, Nicholas Bernthal, Susan Bukata, Sarah Dry, Scott Nelson, Mitchell Kamrava, John Lewis, Daniel Low, Michael Steinberg, Peng Hu, Yingli Yang
University of California, Los Angeles, Los Angeles, CA

74 ESTIMATING 2D DEFORMATION VECTOR FIELDS FROM GOLDEN ANGLE RADIAL UNDERSAMPLED K-SPACE USING STACKED CONVOLUTIONAL NEURAL NETWORKS
Maarten Terpstra, Federico D’Agata, Bjorn Stemkens, Jan Lagendijk, Nico van den Berg, Rob Tijssen
University Medical Center Utrecht, Utrecht, NL

75 DOSIMETRIC EVALUATION OF PSEUDOCTS, GENERATED USING 2D AND 3D UNETS, FOR MR-GUIDED PHOTON AND PROTON THERAPY OF BRAIN LESIONS
Sebastian Neppl¹, Guillaume Landry¹, David Hansen², Ben Hoyle¹, Jochen Weller¹, Claus Belka¹, Katia Parodi¹, Florian Kamp¹, Christopher Kurz¹
¹Ludwig-Maximilians-Universität München, Munich, GER
²Software, Aarhus, DK

76 HIGH-RESOLUTION SYNTHETIC-CT GENERATION WITH CONDITIONAL GENERATIVE ADVERSARIAL NETWORKS
Kevin N.D. Brou Boni¹, Ludovic Vanquin², Antoine Wagner³, John Klein³, David Pasquier¹, Nick Reynaert³
¹Université Lille, CNRS, Centrale Lille, Centre de Recherche en Informatique Signal et Automatique de Lille, Lille, FR
²Lille, FR
³Université Libre de Bruxelles, Lille, FR
UTILIZING A CONDITIONAL GENERATIVE ADVERSARIAL NETWORK FOR SYNTHETIC CT GENERATION IN MRI-GUIDED PROTON THERAPY FOR PROSTATE CANCER
Christopher Kurz¹, Cornelis AT van den Berg², Mark HF Savenije², Guillaume Landry¹, Claus Belka¹, Katia Parodi¹, Matteo Maspero²
¹Ludwig-Maximilians-Universität München, Garching, GER
²University Medical Center Utrecht, Utrecht, NL

12:35-12:45 Symposium Wrap Up
Poster Abstracts

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LIVER SBRT ON THE MR-LINAC: QUANTIFYING THE DOSIMETRIC IMPACT OF THE ARMS-DOWN TREATMENT SETUP
Wouter van den Wollenberg, Peter de Ruiter, Edwin Jansen, Marlies Nowee, Jan-Jakob Sonke, Martin Fast
The Netherlands Cancer Institute, Amsterdam, NL

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MRI-BASED EVALUATION OF NORMAL TISSUE DEFORMATION AND BREATHING MOTION UNDER ABDOMINAL COMPRESSION
Maureen Lee, Anna Simeonov, Laura Dawson, Michael Velec
University of Toronto, Toronto, ON

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Nadia Harhen, Dan Coppens, Kenne Zony, Alexandra Smythe, Jeremy Carlson
Qfix, Avondale, PA

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EVALUATING GEOMETRIC AND DOSIMETRIC ACCURACY OF SYNTHETIC CT IMAGES FOR MRI-ONLY STEREOTACTIC RADIOSURGERY
Ali Fatemi, Chunli (Claus) Yang, Madhava Kanakamedala
University of Mississippi Medical Center, Jackson, MS

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EVALUATION OF SYNTHETIC CT OF THE PELVIS: DOSIMETRIC COMPARISON WITH CONVENTIONAL CT
Jonathan Goodwin¹, Matthew Richardson¹, Kate Skehan¹, Peter Greer¹, John Simpson¹, Victoria Sherwood²
¹Calvary Mater Newcastle, Newcastle, NSW
²Siemens Healthcare Pty. Ltd, Adelaide, AU

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INVESTIGATING THE ACCURACY OF MR-CBCT SOFT-TISSUE MATCHING WITH MR AS THE REFERENCE IMAGE IN AN MR-ONLY RADIOTHERAPY WORKFLOW
Jonathan Wyatt
Newcastle upon Tyne Hospitals NHS Foundation Trust, Newcastle upon Tyne, UK

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STETAGICALLY ACQUIRED GRADIENT ECHO (STAGE) IMAGING FOR MRI ONLY STEREOTACTIC RADIOSURGERY PLANNING
Ali Fatemi¹, Edward Florez¹, Mark Haacke²
¹University of Mississippi Medical Center, Jackson, MS
²Wayne State University, Detroit, MI
MR.OCKS: CONSENSUS BUILDING FOR MR GUIDED RADIATION THERAPY: OPPORTUNITIES, CHALLENGES, KNOWLEDGE AND SKILLS
Mikki Campbell¹, Darby Erler², Alejandro Berlin², Maria Boyd³, Carrie Bru⁴, Cathy Carpino Rocca⁵, Sue Crisp¹, Andrei Damyanovich², Colleen Dickie², Shannon Eberle⁶, Susan Fawcett⁷, Mark Given⁴, Nicole Harnett⁷, Andra Morrison⁸, Deborah Pascale², Marc Potvin², Christine Power¹⁰, Laura D’Alimonte⁶
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⁶Cross Cancer Institute, Edmonton, AB
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⁹Centre Hospitalier de Université de Montreal, Montreal, QC
¹⁰Alliance of Regulators, Dieppe, NB

EFFICIENT PREDICTION OF DOSE CHANGES DUE TO UNPLANNED GAS CAVITIES IN MAGNETIC RESONANCE GUIDED RADIOTHERAPY
Jane Shortall¹, Eliana Vasquez Osorio¹, Andrew Green¹, Robert Chuter², Alan McWilliam¹, Karen Kirkby¹, Ranald MacKay², Marcel van Herk¹
¹The University of Manchester, Manchester, UK
²The Christie NHS Foundation Trust, Manchester, UK

QUALITY ASSURANCE FOR MRI IN RT: EXPERIENCES WITH THE ACR QA PHANTOM
Mary Adjeiwaah, Patrik Brynolfsson, Anders Garpebring, Tufve Nyholm
Umeå University, Umeå, SE

PROSTATE TUMOR CHARACTERISTICS IN MR AND ACETATE-PET IMAGES - IMPACT OF ANDROGEN DEPRAVATION THERAPY
Ulrika Björelund, Joakim Jonsson, Sara Strandberg, Lars Beckman, Tufve Nyholm, Camilla Thellenberg Karlsson
Umeå University, Umeå, SE

ANATOMICAL DEFORMATION DUE TO HORIZONTAL ROTATION: TOWARDS GANTRY-FREE MRI-LINAC THERAPY
Jarryd Buckley¹, Robba Rai², Gary Liney³, Jason Dowling⁴, Lois Holloway², Peter Metcalfe¹, Paul Keall⁵
¹University of Wollongong, Wollongong, AU
²Liverpool Hospital, Sydney, AU
³Ingham Institute for Applied Medical Research, Sydney, AU
⁴CSIRO, Brisbane, AU
⁵University of Sydney, Sydney, AU
APPLYING A COMMERCIAL ATLAS-BASED SYNTHETIC COMPUTED TOMOGRAPHY ALGORITHM TO PATIENTS WITH HIP PROSTHESES FOR PROSTATE MR-ONLY RADIOTHERAPY
Jonathan Wyatt, Hazel McCallum
Newcastle upon Tyne Hospitals NHS Foundation Trust, Newcastle upon Tyne, UK

FIVE YEARS' EXPERIENCE OF AN MR-GUIDED TRACKING AND ONLINE ADAPTIVE RADIOTHERAPY PROGRAM: PROCESS IMPROVEMENTS MEASURED BY A RADIATION ONCOLOGY INCIDENT LEARNING SYSTEM
Kathryn Mittauer1, Dustin Jacqmin1, Michael Bassetti1, Poonam Yadav1, Patrick Hill1, Mark Geurts2, Daniel Steinhoff3, Bhudatt Paliwal1
1University of Wisconsin-Madison, Madison, WI
2Aspirus Wausau Hospital, Wausau, WI

A SURVEY OF MRI IN RADIOTHERAPY - OPINIONS ON ORGANIZATION AND EDUCATION
Lars E. Olsson1, Teo Stanescu2
1Lund University, Malmö, SE
2Princess Margaret Cancer Centre, University of Toronto, Toronto, ON

MRI-GUIDED FOCAL HDR BRACHYTHERAPY AS MONOTHERAPY FOR PROSTATE CANCER: EARLY FEASIBILITY AND QUALITY OF LIFE RESULTS
Rachel Glicksman, Noelia Sanmamed, Joelle Helou, Peter Chung, Alejandro Berlin
University of Toronto, Toronto, ON

EXPERIMENTAL DETERMINATION AND CLINICAL VALIDATION OF LATERAL DOSE RESPONSE FUNCTIONS OF PHOTON-DOSIMETRY DETECTORS IN MAGNETIC FIELDS
Ann-Britt Ulrichs1, Björn Delfs1, Louisa Bretschneider1, Ian Hanson2, Simeon Nill2, Filipa Costa2, Uwe Oelfke2, Björn Poppe1, Hui Khee Looe1
1Carl-von-Ossietzky University of Oldenburg, Oldenburg, GER
2Institute of Cancer Research London, London, ON

RADIOLUCENCY OF A 32-CHANNEL HIGH IMPEDANCE COIL RECEIVE ARRAY FOR THE 1.5T MR-LINAC
Stefan Zijlema1, Luca van Dijk1, Lovisa Westlund Gotby1, Michel Italiaander2, Rob Tijssen1, Jan Lagendijk1, Nico van den Berg1
1University Medical Center Utrecht, Utrecht, NL
2MR Coils, Zaltbommel, NL

EVALUATION OF SYNTHETIC CT DATA IN AN MR ONLY HEAD AND NECK RADIATION THERAPY WORKFLOW
Emilia Palmér1, Anna Karlsson1, Fredrik Nordström1, Carl Siversson2, Karin Petruson1, Maria Ljungberg1, Maja Sohlin1
1University of Gothenburg, Gothenburg, SE
2Spectronic Medical AB, Helsingborg, SE
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Tohoku University Graduate School of Medicine, Sendai, JP

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Ryan Oglesby¹, Mark Ruschin¹, Wilfred Lam², Young Lee¹, Arman Sarfehnia¹, Collins Yeboah¹, Arjun Sahgal², Hany Soliman¹
¹University of Toronto, Toronto, ON
²Sunnybrook Research Institute, Toronto, ON

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DOSIMETRIC IMPACT OF DAILY PLAN ADAPTATION FOR MAGNETIC RESONANCE-GUIDED LIVER STEREOTACTIC BODY RADIOTHERAPY
Edward Taylor¹, Andrea Shessel², Michael Velec¹, Teo Stanesu¹, Laura Dawson¹, Daniel Letourneau¹, Patricia Lindsay¹
¹University of Toronto, Toronto, ON
²Princess Margaret Cancer Centre, Toronto, ON

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FIRST 3T RADIOTHERAPY MRI COIL FOR MR IN RT
Nadia Harhen¹, Dan Coppens¹, Daniel Gareis², Hamid Amooi², Jeremy Carlson¹, Andrew Johnson¹
¹Qfix, Avondale, PA
²NORAS MRI Products, Höchberg, GER

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ANATOMICAL CHANGES DURING MR-GUIDED RADIOTHERAPY OF PROSTATE CANCER PATIENTS - A NEED FOR SPEED?
Emilia Persson¹, Annika Mannerberg², Joakim Jonsson³, Christian Gustafsson¹, Adalsteinn Gunnaugsson⁴, Sofie Ceberg², Lars E. Olsson¹
¹Lund University, Malmö, SE
²Lund University, Lund, SE
³Umeå University, Umeå, SE
⁴Skåne University Hospital, Lund, SE

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PREDICTING RADIATION TREATMENT EFFECT IN EXTREMITIES/TRUNK SOFT TISSUE SARCOMA VIA RADIOMICS OF QUANTITATIVE T2 RELAXATION MAPS
Chenyang Wang, Anusha Kalbasi, Yu Gao, Peng Hu, Daniel Low, Yingli Yang,
UCLA, Los Angeles, CA

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Anil Sethi, Eenas Omari, Tanesha Beebe, John Roeske, Edward Melian, Tamer Refaat, Raymond Wynn
Loyola University Medical Center, Maywood, IL
GENTLE RADIOTHERAPY - THE MOVIE
Christian Gustafsson¹,², Lars E Olsson³, Carl Siversson³, Simon Lindgren⁴, Tufve Nyholm⁴
¹Skåne University Hospital, Lund, SE
²Lund University, Lund, SE
³Spectronic Medical AB, Helsingborg, SE
⁴University Hospital of Umeå, Umeå, SE

IMPLEMENTING TECHNOLOGY TO DRIVE IMPROVEMENTS WITHIN A HIGH VOLUME BRACHYTHERAPY PROGRAM
Laura D'Alimonte, Ananth Ravi
University of Toronto, Toronto, ON
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