2020 Joint AAPM | COMP Meeting

A Selection of Studies Featuring Sun Nuclear Solutions

SRS/SBRT QA

Featuring StereoPHAN™, SRS MapCHECK® & Multi-Met WL Cube

PO-GeP-T-805 StereoPHAN

Treatment Couch Modeling Via Measured Attenuation Using a Symmetrically Shaped Stereotactic Phantom

X Du, B Rasmussen, UP Health System - Marquette General Hospital, Marquette, MI*

PO-GeP-T-671 StereoPHAN

Quality Assurance for a Commercial Automated VMAT SRS System

Y Yuan, R Sullivan, R Popple, Univ Alabama Birmingham, Birmingham, AL*

PO-GeP-T-96 SRS MapCHECK

An Evaluation of SRS MapCHECK for the QA of Stereotactic Radiotherapy Plans for Patients with Multiple Metastasis and Small Targets

R Teboh Forbang, A Ndlovu, Hackensack Univ Medical Center, Hackensack, NJ*

- *Summary: Validation of SRS MC with Vertex field capabilities for SIMM and small targets – 0.2cc – 1.4cc, using 6FFF/10FFF. Excellent results.*

PO-GeP-T-396 SRS MapCHECK

Evaluation of a Diode Array for Patient Specific QA of An Automated VMAT SRS System

R Popple, R Sullivan, Y Yuan, X Wu, University of Alabama at Birmingham, Birmingham, AL**

- *"Conclusion: The SRS MapCHECK is a suitable replacement for RCF (radio chromatic film) for VMAT SRS. Further investigation is underway to identify the small systematic difference between the center diode and RCF."*

PO-GeP-T-273 SRS MapCHECK

Determination of Confidence Limits for Linac-Based SRS Point, Composite and Per-Field Measurements From a Clinically Comprehensive SRS Test Suite

G Baran1, R Culcasi1, M Dominello2, J Burmeister1,2, (1) Karmanos Cancer Institute, Detroit, MI (2) Wayne State University School of Medicine, Detroit, MI*

- *Summary: SRS validation Test Suite study based on TG-119*
- *"This standardized approach to linac-based SRS commissioning provides a mechanism for the medical physics community to evaluate the implementation and delivery accuracy of SRS systems, similar to TG-119 for IMRT."*

BReP-SNAP-M-40 SRS MapCHECK

Commissioning and Performance Testing of the First Prototype of AlignRT InBore, a Halcyon™-Dedicated Surface Guided Radiation Therapy Platform

D NGUYEN1, J Farah2, J Hughes2, P Mathieu2, N Barbet1, M Khodri1, (1) Radiotherapy centers of ORLAM group, Macon, FR, (2) Vision Rt Ltd, London, UK*

- *Summary: Validation of AlignRT on Halcyon using ArcCHECK and SRS MapCHECK*

PO-GeP-T-631 SRS MapCHECK

Patient SRS Plans Verification of the New O-Ring System (Halcyon™)

D NGUYEN1, J Farah2, J Hughes2, P Mathieu2, N Barbet1, M Khodri1, (1) Radiotherapy centers of ORLAM group, Macon, FR, (2) Vision Rt Ltd, London, UK*

- *Summary: Validation of Varian Medical Systems® Halcyon™ System with SRS MapCHECK. 20 test plans, the mean passing rates of the global gamma index analysis were ?global = 99.48 ±0.46% ?global = 97.27±1.38% for the 1%/1mm and 0.5%/0.5mm criteria, respectively*

PO-GeP-T-206 SRS MapCHECK

Comparative Study of SRS End-To-End QA Processes of a Diode Array Device and An Anthropomorphic Phantom Loaded with Radiochromic XD Film

S Lim, M Chan, L KUO, T Li, X Li, A Ballangrud, D Lovelock, Memorial Sloan Kettering Cancer Center, New York, NY*

PO-GeP-T-214 SRS MapCHECK

Comparison of AAA and Acuros XB Dose Calculation Algorithms for SRS

F Yeh, J Adamson, Z Wang, Duke University Medical Center, Durham, NC*

- *Summary: Comparison of AAA vs Acuros with SRS MC – AAA had higher pass rates; PTV minimum doses disagreed most.*

PO-GeP-P-49 SRS MapCHECK

Correlation Study of Mechanical Accuracy and Longitudinal Location of a Six Degrees-Of-Freedom Couch

J Li, M Chan, Memorial Sloan Kettering Cancer Center, Basking Ridge, NJ*

- *Summary: SRS MapCHECK used to validate a Protura 6DOF couch*

PO-GeP-T-417 SRS MapCHECK

Evaluation of SRS MapCHECK for Small-Field CyberKnife G4 Patient Specific Quality Control

B Wilson, J Szanto, The Ottawa Hospital, Ottawa, ON CA*

- *"Conclusion: The SRS MapCHECK was shown to be suitable for all patient-specific measurements in the treatments that were tested."*

PO-GeP-T-109 SRS MapCHECK

Angular Dependency of the Measurements of the Novel SRS MapCheck Device in the Magnetic Field

O Pen, A Price, Washington University in St. Louis, St. Louis, MO*

- *Please note: SRS MapCHECK is not currently released for MRgRT, but this is an interesting study.*

TH-A-TRACK 5-7 SRS MapCHECK

Robust Treatment Planning with Conformal Arc Informed VMAT (CAVMAT)

E Cullom1, Z Gude1, Y Xia2, K Chuang2, Y Zlateva3, J Kirkpatrick3, F Yin3, J Adamson3, W Giles3, (1) Duke University, Durham, NC, (2) Duke Kunshan University, Zhubei City, HSQ, TW, (3) Duke University Medical Center, Durham, NC*

PO-GeP-T-729 SRS MapCHECK

Small Field Stereotactic Radiosurgery Fluence Measurement for Cone and MLC-Based Plans Using SRS MapCHECK

C Geraghty1, T Li2, J Carroll3, B Hasson4, (1) Anne Arundel Medical Center, Annapolis, MD, (2) Annapolis, MD, (3) Versant Medical Physics & Radiation Safety, Tewksbury, MA, (4) Anne Arundel Medical Center, Annapolis, MD*

- *Summary: Validation of 6mm/10mm cones and MLC plans with SRSMC. "Using 1%/1mm criteria… Cone plan passing rates ranged from 97.1% to 100%. MLC plan passing rates ranged from 91.5% to 96.9% without CAX offset. CAX offset of Y = -0.7mm improved all MLC plan passing rates to 100%."*

PO-GeP-T-188 SRS MapCHECK

Clinical Implementation of a New a Single-Isocenter Multiple-Target Cranial Optimization Algorithm

C Knill, R Sandhu, R Halford, L Lin, Z Seymour, I Grills, P Chinnaiyan, Beaumont Health System, Royal Oak, MI*

- *Summary: Validation of BrianLab's new SIMT algorithm using SRS MapCHECK.*

PO-GeP-T-838 MM-WL Cube

Validation of a New Tool for Testing Spatial Accuracy of Off-Axis Beam Apertures Used in Single-Isocenter Stereotactic Treatment of Multiple-Metastases of the Brain

D Pinkham1, A Murray2, H Kudrolli2, S Hancock3 (1) Yale School of Medicine, New Haven, CT, (2) Sun Nuclear Corporation, Melbourne, FL, (3) Southeast Missouri Hospital, Cape Girardeau, MO*

- *"Purpose: A prerequisite for simultaneous SRS treatment of multiple targets is validation of the spatial accuracy of off-axis beam apertures."*
- *"Results: The new tool was used to test multiple Elekta LINACs with Agility collimator…For one of the linacs, the test detected a lateral misalignment of the MLC leaf bank and misalignment of the couch axis from the gantry isocenter."*
- *"Conclusion: The tool provides for effective and efficient testing for commissioning and QA of a stereotactic program that includes simultaneous treatment of multiple metastasis."*

MRgRT QA

Featuring ArcCHECK®-MR & IC PROFILER™-MR

PO-GeP-T-839 ArcCHECK-MR

Validation of a Non-Isocentric Positioning of the ArcCHECK System for Patient-Specific QA On a 0.35 T MR-Linac

O Lorenzo, A Petitfils, I Bessieres, Centre Georges-francois Leclerc, Dijon, FR*

PO-GeP-T-826 ArcCHECK-MR

Using a Commercial Convolution/Superposition Dose Engine for MR-LINAC On-Line Plan QA

Y Li1, T Song2, B Wang1, S Ding1, H Liu1, Y XIA1, X HUANG1, (1) Sun Yat-sen University Cancer Center, Guangzhou, ,CN, (2) Southern Medical University, Guangzhou, Guangdong, CN*

PO-GeP-M-384 ArcCHECK-MR

Statistical Process Control Analysis of Adaptive Patient Specific QA On the Elekta Unity MRI-Linac

S Strand*, A Boczkowski, J Snyder, D Hyer, S Yaddanapudi, D Dunkerley, J St-Aubin, University of Iowa, Iowa City, IA

PO-GeP-T-204 ArcCHECK-MR

Commissioning Report of a High Field MR-Linac System

N Tyagi1*, E Subashi2, P Godoy Scripes3, J Mechalakos4, X Gonzalez Souto5, S Lim6, *(1,2,3,4,6) Memorial Sloan-Kettering Cancer Center, New York, NY, (5) Elekta*

PO-GeP-M-65 ArcCHECK-MR

ArcCHECK for Machine Commissioning and Patient Specific QA: Which Phantom Should Be Used?

Y Tian, K Zhang, K Men, J Dai, National Cancer Center/National Clinical Research Center for Cancer/Cancer Hospital,Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing, Beijing,CN,*

BReP-SNAP-T-24 ArcCHECK-MR

An Investigation of Using Logfile Analysis for Automated Patient Specific Quality Assurance in MRgRT

S Lim1, P G Scripes1, M Napolitano2, E Subashi1, N Tyagi1, L Cervino 1, D Lovelock1, (1) Memorial Sloan-Kettering Cancer Center, New York, NY, (2) Standard Imaging, Middleton, WI*

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A Selection of Studies Featuring Sun Nuclear Solutions

MRgRT QA, cont'd

Featuring ArcCHECK®-MR & IC PROFILER™-MR

BReP-SNAP-M-123 IC PROFILER-MR

Rapid Commissioning of An MR-Linac with Hydrostatic and Cherenkov Imaging Techniques

R Zhang, D Alexander, B Williams, L Gates, F Rafie, N Nelson, P Bruza, B Pogue, B Zaki, D Gladstone, Dartmouth-Hitchcock Med. Ctr., Lebanon, NH*

PO-GeP-T-634 IC PROFILER-MR

Performance Characterization of a Clinical 1.5 T MR-Linac

B Keller1, A Kim1, V Iakovenko1, M Ruschin1, C McCann1, D Beachey1, B Chugh1, A Elzibak1, A Sahgal2, A Sarfehnia1, (1) Sunnybrook Health Sciences Centre, Odette Cancer Centre, Department of Medical Physics, Toronto, ON, CA, (2) Sunnybrook Health Sciences Centre, Odette Cancer Centre*

Patient QA – SunCHECK™ Patient

Featuring PerFRACTION™, DoseCHECK™ & PlanCHECK™

PO-GeP-T-503 + ArcCHECK

Implementation of the Full SunCheck Platform DoseCheck and PerFraction in a Community Setting

A Yorke, J Zhai, A Gonzalez, Mercy Health Cancer Center, Elyria, OH*

- *"Conclusion: PerFRACTION™ and DoseCHECK™ software have been validated since they gave very similar results to the well-known RADCALC® software and AC pretreatment QA… the system is automated making it very realistic to perform daily in-vivo dosimetric QA on every field for every patient for every fraction using exit dose images. This feature makes using the EPID panel very convenient for per fraction QA to account for patient set up errors and changes to patient anatomy."*

PO-GeP-T-384

EPID 2D TRANSMISION IN VIVO DOSIMETRY: Can It Detect Clinically Relevant Differences in Lung SBRT?

N Jornet, P Carrasco De Fez, A Latorre-mussoll, P Gallego, P Delgado, J Perea-alija, M Ribas Morales, Hospital Sant Pau, Barcelona*

PO-GeP-M-187

Establishing a Routine Clinical Dose Verification Workflow Utilizing CBCT Imaging and Log Files

G Kuzmin, P Xia, P Qi, The Cleveland Clinic Foundation, Cleveland, OH*

- *"Conclusion: results from this study show that it is clinically feasible to use CBCT images in a clinical dose verification workflow. Since the images and log files are routinely acquired, and CT-CBCT fusion and dose calculation is automated, there is practically no additional burden to utilizing this method routinely."*

PO-GeP-T-779

The Impact of the Source-Imager-Distance on the Results of EPID-Based Patient-Specific QA

G Kuzmin, P Xia, P Qi, The Cleveland Clinic Foundation, Cleveland, OH*

Machine QA – SunCHECK™ Machine

Featuring SNC Routine™, SNC Machine & Device Connectivity

PO-GeP-T-186 + IC PROFILER

Clinical Experience Implementing An Ion Chamber Array for Monthly Beam Constancy Versus Ion Chamber in Water

D Barbee, S Taneja, A Rea, NYU Langone Health, New York, NY*

- *"Results: ICP reduced overall measurement time compared to FCW for photons and electrons by 50% and 66%, respectively. … R50 and D10 beam quality measurements were more consistent using ICP than FCW with RMSE values of 0.05 and 0.19 mm for electrons and 0.14 and 0.53% for photons, respectively."*
- *"Conclusion: The combination of IC PROFILER with proper baselines and the SNC Routine system provides similar output measurement, more consistent beam quality, and improved efficiency in comparison to a Farmer chamber in water technique."*

PO-GeP-T-234

Comparison of Vendor-Dependent Versus Commercially-Available, Independent LINAC Quality Assurance (QA) for Daily QA

C Stambaugh, C Melhus, Tufts Medical Center, Boston, MA*

- *"Purpose: To investigate and compare time efficiency, data collected, and results of vendor-based versus independent-QA platforms for daily LINAC QA."*
- *Conclusion: "…the independent QA platform can obtain dosimetry results more efficiently and can provide a more user-friendly interface for complete DQA data collection."*

PO-GeP-T-241

Cone Beam Computed Tomography (CBCT) Image Quality Assurance: Establishing a Quantitative Program

S Taneja, D Barbee, A Rea, M Malin, NYU Langone Medical Center, New York, NY*

Patient QA

Featuring PlanIQ™

PO-GeP-T-776

The Impact of Plan Feasibility Predictions On VMAT Treatment Planning

J Rembish, C Kabat, E Jang, M Olivares, C Payne, C Rendon, N Kirby, S Stathakis, N Papanikolaou, P Myers, UT Health San Antonio, San Antonio, TX*

- *"Conclusion: The use of Feasibility with Pinnacle's Personalized Planning can help reduce the mean and maximum dose to OARs while maintaining target coverage."*

PO-GeP-P-73

An Exploratory Study On Obtaining Optimal Parameters Of Intensity Modulated Radiotherapy Treatment Plans For Breast Cancer Using Ideal DVH

X Lin, Y Yin, T Sun, Shandong cancer hospital and institute,Shandong first medical university and shandong academy of medical sciences, Jinan, Shandong, CN*

Patient QA

Featuring ArcCHECK® & MapCHECK®

PO-GeP-T-12 ArcCHECK

A Comprehensive Evaluation of the IQM System Accuracy for Standard Fields and Error Detection Sensitivity for Lung SBRT and Nasopharynx VMAT Plans

T Alharthi, A George, S Arumugam, L Holloway, D Thwaites, P Vial, The University of Sydney, Liverpool and Macarthur Cancer Therapy Centers, Ingham Institute for Applied Medical Research, School of Medicine, Taif University, South Western Sydney Clinical School, University of New South Wales*

PO-GeP-T-101 ArcCHECK

An Investigation Into VMAT Patient-Specific QA Pass Rates Influenced by Linac Performance

S Kucuker Dogan1, D Schulze1, M Gopalakrishnan1, D Cutright2, (1) Northwestern Memorial Hospital, Chicago, IL, (2) University of Chicago Medicine, Chicago, IL*

PO-GeP-P-85 ArcCHECK

Analysis of Portal Dosimetry Patient-Specific Quality Assurance Results of 1203 Patients Treated with Varian Halcyon 1.0 Accelerator

Z Wang, B Yang, L Yu, T Pang,B Wang, F Zhang, J Qiu, Peking Union Medical College Hospital, Beijing, CN*

PO-GeP-M-65 ArcCHECK

ArcCHECK for Machine Commissioning and Patient Specific QA: Which Phantom Should Be Used?

Y Tian, K Zhang, K Men, J Dai, National Cancer Center/National Clinical Research Center for Cancer/Cancer Hospital,Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing, Beijing,CN,*

PO-GeP-T-126 ArcCHECK

Assessment of Beam and Delivery Quality for Interchanging Intensity-Modulated Treatment Plans with Two 6MV Beam-Matched Linear Accelerators

C Fang1,2, Y Song2, W Xu1, L Cao2, Y Tao1, Z Wang2, L Zhu2, B Qu1, S Xu1,2,3, (1) Department of Radiation Oncology, the First Medicine Center of PLA General Hospital, Beijing, 100853, China(2)Department of Radiation Oncology, Hebei Yizhou Cancer Hospital, Zhuozhou, 072750, China(3) Beijing Advanced Innovation Center for Big Data-Based Precision Medicine, Beihang University, Beijing 100083, China*

PO-GeP-T-190 ArcCHECK

Clinical Implementation of TG-218: Process-Based IMRT Analytics

B Granger1, J McGlade1, F Mourtada1, (1) Christiana Care Hospital, Newark, DE*

BReP-SNAP-M-40 ArcCHECK

Commissioning and Performance Testing of the First Prototype of AlignRT InBore, a Halcyon™-Dedicated Surface Guided Radiation Therapy Platform

D NGUYEN1, J Farah2, J Hughes2, P Mathieu2, N Barbet1, M Khodri1, (1) Radiotherapy centers of ORLAM group, Macon, FR, (2) Vision Rt Ltd, London, UK*

PO-GeP-T-348 ArcCHECK

Dosimetric Impact of the Use of Jaw Tracking for Fields Smaller Than 3x3cm2 in Lung SBRT VMAT Plans

E Hubley, R Scheuermann, D Carlson, C Kennedy, University of Pennsylvania, Philadelphia, PA*

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A Selection of Studies Featuring Sun Nuclear Solutions

Patient QA, cont'd

Featuring ArcCHECK® & MapCHECK®

PO-GeP-T-385 ArcCHECK

Error Detection Sensitivity of the SNC and PTW Patient-Specific Quality assurance Devices

B Rudek1, M Manavalan2, J Xue1, (1) NYU Langone Health, New York, NY, (2) PTW North America Corporation, New York, NY*

PO-GeP-T-431 ArcCHECK

Examining ArcCHECK Array Calibration Validity and Its Impact On Patient Specific QA Results

H Nusrat1,2, L Lukhumaidze1, A Singh1, P Au1, Y Lee1,2, M Davidson1,2, (1) Department of Medical Physics, Odette Cancer Centre, Sunnybrook Health Sciences Centre, Toronto, ON, CA, (2) Department of Radiation Oncology, University of Toronto, Toronto, ON, CA*

PO-GeP-T-468 ArcCHECK

Full Automation of Spine Stereotactic Radiosurgery/Stereotactic Body Radiation Therapy (SRS/SBRT) Planning Using Varian Eclipse Scripting API

J Teruel, M Malin, A McCarthy, E Sulman, J Silverman, D Barbee, Department of Radiation Oncology, NYU Langone Health, New York, NY*

PO-GeP-T-503 SunCHECK Patient + ArcCHECK

Implementation of the Full Sun Check Platform Dose Check and Per Fraction in a Community Setting

A Yorke, J Zhai, A Gonzalez, Mercy Health Cancer Center, Elyria, OH*

PO-GeP-T-532 ArcCHECK

Investigating the Dosimetric Consequences of Eclipse Couch Rail Modelling

K Spuhler, K Osterman, NYU Langone Health, New York, NY*

PO-GeP-T-599 ArcCHECK

Multi-Leaf Collimator Leaf Open Time Sinogram (LOTS) Based Patient Specific Quality Assurance: A Novel Approach for Total Marrow Irradiation

Rajesh T1, Dayananda S1, G Krishnan1, A Manikandan1, M Noufal1, K Patro1, A Nambiraj N2, S Kaushik1, R Jalali1, (1) Apollo Proton Cancer Centre, Chennai, Tamil Nadu, India, (2) Vit University, Vellore India*

PO-GeP-T-630 ArcCHECK

Patient Specific Quality Assurance of Volumetric Modulated Arc Therapy (VMAT): Portal Dosimetry Compared with ArcCheck Phantom

K Utitsarn, T Watthanasarn, J Pimthong, K Krongkietlearts, C Pihusut, W Chaloemchawalit, J Jitmon, S Khuanchana, Lopburi Cancer Hospital, Lopburi, Thailand*

PO-GeP-T-655 ArcCHECK

Predictive Gamma Passing Rate of 3D Array Detector-Based VMAT QA Via Deep Learning Combining Dose Distribution and Accumulated Dose Uncertainty Potential Distribution

T Matsuura1,2, D Kawahara2, A Saito3, E Shiba4, K Yamada1, S Ozawa1,2, Y Nagata1,2, (1) Hiroshima High-precision Radiotherapy Cancer Center, JP, (2) Hiroshima University, JP, (3) Hiroshima University Hospital, JP, (4) University of Occupational and Environmental Health, JP*

PO-GeP-T-716 ArcCHECK

Sensitivity of Detecting MLC Positioning Errors for SBRT Treatment at Halcyon Linac

J Allen, W Luo, D Pokhrel, University of Kentucky, Lexington, KY*

PO-GeP-T-759 ArcCHECK

The Correlation of MLC leaf Trajectory Errors and Gamma Passing Rates of Patient-Specific ArcCHECK-Based QA for Varian TrueBeam VMAT

Y Watanabe, L Claps, University of Minnesota, Minneapolis, MN*

PO-GeP-T-798 ArcCHECK

Total Spine Radiotherapy: A VMAT Approach

E Barnett, R Chmielewski, S Abbas, Southlake Regional Health Centre, Newmarket, Ontario, Canada*

PO-GeP-T-826 ArcCHECK

Using a Commercial Convolution/Superposition Dose Engine for MR-LINAC On-Line Plan QA

Y Li1, T Song2, B Wang1, S Ding1, H Liu1, Y XIA1, X HUANG1, (1) Sun Yat-sen University Cancer Center, Guangzhou, ,CN, (2) Southern Medical University, Guangzhou, Guangdong, CN*

PO-GeP-P-19 ArcCHECK

Validation of Dosimetric Commissioning Accuracy Of IMRT and RapidArc for Halcyon Linear Accelerator Using AAPM TG-119 Protocol

B Yang, L Yu, Z Wang, W Li, J Zhang, T Pang, K Hu, F Zhang, J Qiu, Peking Union Medical College Hospital, Beijing, 11CN*

PO-GeP-T-235 MapCHECK

Comparison Study for Portal Dosimetry Vs Diode Array in VMAT/IMRT Patient QA

N Demez, D Soultan, R Badkul University of Kansas Hospital, Overland Park, KS*

PO-GeP-T-822 MapCHECK

Use of DLG Tuning to Achieve Beam Matching for TrueBeam Linacs

K Sukumar, Y Liu, E Elder, A Iwinski Sutter, H Gao, B Bradshaw Ghavidel, Emory University, Atlanta, GA*

PO-GeP-T-848 MapCHECK

Verification of Brainlab Elements for Treating Multiple Brain Metastases with a Single Isocenter

H Jiang, R Badkul, N Demez, H Saleh, University of Kansas Cancer Center, Kansas City, KS*

PO-GeP-T-118 MapCHECK

Array Measurement and Evaluation of 2D Dosimetric Leaf Gap of a MLC System

T Chen, J Xue, D Barbee, New York University, New York, NY*

PO-GeP-T-235 MapCHECK

Comparison Study for Portal Dosimetry Vs Diode Array in VMAT/IMRT Patient QA

N Demez, D Soultan, R Badkul University of Kansas Hospital, Overland Park, KS*

PO-GeP-T-253 MapCHECK + SRS MapCHECK

Cyberknife MultiPlan IMRT QA Comparison Between MapCHECK2 and SRS MapCHECK

W Feng1, L Tirpak2, J Feng3, J Yang4, J Zhou5, C Yang6, L Zhou7, J Sakellakis8, P Abbass9, (1) Saint Barnabas Medical Center (2) Sun Nuclear Corporation (3) Philadelphia Cyberknife (4) Alliance Imaging/Alliance Oncology(5) Rutgers Robert Wood Johnson Medical School (6) Monmouth Medical Center, (7) Livingston, NJ, (8) Clara Maass Medical Center (9) 21st Century Oncology, Jupiter, FL*

PO-GeP-T-398 MapCHECK

Evaluation of a Novel Automation Software for Generating Field-In-Field Plans for Various Treatment Sites

C Esquivel1, L Patton1, B Doozan2, K Nelson1, D Boga1, T Navarro3, (1) Texas Oncology San Antonio, San Antonio, TX, (2) Texas Oncology, McAllen, TX, (3) Texas Oncology Brownsville,TX*

PO-GeP-T-707 MapCHECK

Retrospective Dosimetric Study of a Novel Automation Software for Whole Brain Planning Field-In-Field Treatment Plans

C Esquivel, A Tipton, L Patton, D Baldassari, B Lin, Texas Oncology San Antonio, San Antonio, TX*

Machine QA

Featuring IC PROFILER™ & Daily QA™ 3

PO-GeP-T-820 IC PROFILER

Use of a 2-Dimensional Ion Chamber Array to Measure Head Leakage of a Varian Truebeam Linear Accelerator

S Taneja1*, J Teruel1, L Hu2, J Xue1, D Barbee1, (1) NYU Langone Medical Center, New York, NY (2) New York Proton Center, New York, NY

Use of a 2-Dimensional Ion Chamber Array to Measure Head Leakage of a Varian Truebeam Linear Accelerator

PO-GeP-T-251 IC PROFILER

Currency-Based Shielding of Electron Beams

A Rea*, G Jennings, B Cooper, D Barbee, NYU Langone Health, New York, NY

PO-GeP-T-186 IC PROFILER + SunCHECK Machine

Clinical Experience Implementing An Ion Chamber Array for Monthly Beam Constancy Versus Ion Chamber in Water

D Barbee, S Taneja, A Rea, NYU Langone Health, New York, NY*

- *"Results: ICP reduced overall measurement time compared to FCW for photons and electrons by 50% and 66%, respectively. … R50 and D10 beam quality measurements were more consistent using ICP than FCW with RMSE values of 0.05 and 0.19 mm for electrons and 0.14 and 0.53% for photons, respectively."*
- *"Conclusion: The combination of IC PROFILER with proper baselines and the SNC Routine system provides similar output measurement, more consistent beam quality, and improved efficiency in comparison to a Farmer chamber in water technique."*

PO-GeP-T-587 Daily QA 3

Monitoring X- Energy Variation in Daily QA3 Considering Uncertainty of Detector Inserted in Daily QA 3 Device

S Han*, J Kim, M Han, K Chang, K Park, J Kim, D Kim, Department of Radiation Oncology, Yonsei Cancer Center, Seoul, 41KR

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A Selection of Studies Featuring Sun Nuclear Solutions

Dosimetry

Featuring 3D SCANNER™, EDGE Detector™ & PC Electrometer™

PO-GeP-T-334 3D SCANNER

Dosimetric Data for Small Fields (Square and Stereotactic Cone) for Commissioning of 6MV FFF Beams in the RayStation Treatment Planning System

Y Lee, Y Kim, University of Arizona, Tucson, AZ*

PO-GeP-T-367 3D SCANNER

Effect of Smoothening Algorithms On Small Field Measured Beam Profile Data

Amanjot Kaur1,2, G. Sahani3, (1) Mahatma Phule Charitable Trust Hospital, Navi Mumbai, MH, IN (2) D. Y. Patil Education Society, Kolhapur, MH, IN (3) Atomic Energy Regulatory Board, Mumbai, IN*

PO-GeP-T-313 EDGE Detector

Dose-Rate and "SSD" Dependence of Commercially Available Diamond and Diode Detectors

A Khan, W Culberson, L DeWerd, Dept of Med Phys, School of Medicine and Public Health, Univ of Wisc-Madison*

PO-GeP-T-740 EDGE Detector

Stereotactic Cone Output Factors of Flattening-Filter-Free Mode Photon Beams; a Plastic Scintillation Detector Measurement Study

J Kim, D Kahn, X Qian, S Lu, A T Hsia, Z Xu, Stony Brook University Medical Center, Stony Brook, NY*

PO-GeP-T-598 EDGE Detector

Multicentre Comparison of Scatter Factors for Square and Rectangular Small Fields Defined for TrueBeam Linacs

C Venencia1,A Alarcon1*, F. Bregains2*, N. Larragueta2*, R. Hill3*, J. Morales3*, A. Adrada4*, D. Gonzalez4*, D. Vaca5*,J. Paz5*,(1) Instituto Zunino - Fundacion Marie Curie, ARGENTINA, (2) CEMENER, ARGENTINA, (3) Chris O'Brien Lifehouse, AUSTRALIA, (4) Clinica de Occidente, COLOMBIA, (5) Clinica Valle del Lili, COLOMBIA*

PO-GeP-P-50 PC Electrometer

Toward A Filmless Gamma Knife (GK) Annual QA

T Qu, B Rudek, K Bernstein, NYU Langone Health, Brookline, MA*

PO-GeP-T-116 PC Electrometer

Ardunio Controlled Low Cost, Practical Dosimetry Beam Scanning System

N Demez1, (1) University of Kansas Hospital, Overland Park, KS*

BgRT (RefleXion) Validation

Featuring ArcCHECK®

PO-GeP-T-841

Validation of ArcCHECK for Use with a Novel Ring Gantry-Based Biology-Guided Radiotherapy (BgRT) Machine

D Zaks1, M Narayanan2, R Bassalow3, O Volotskova4, C Huntzinger5, S Shirvani6, S Mazin7, G Kuduvalli8, (1, 2, 5, 6, 7, 8) RefleXion Medical, Hayward, CA, (3) Northwest Medical Physics, Silverdale, WA, (4) Sutter Health, Berkeley, CA*

PO-GeP-T-171

Characterization of IMRT, SBRT and SRS Patient Plan Quality Assurance of a Novel Biology-Guided Radiotherapy (BgRT) Machine

D Zaks1, A Purwar2, M Narayanan3, S Khan4, J White5, A Da Silva6, C Han7, J Liang8, D Du9, A Liu10, Y Voronenko11, D Pal12, D Rigie13, J Burns14, G Kuduvalli15, (1-6, 11-15) RefleXion Medical, Hayward, CA, ((7-9) City of Hope Medical Center, Duarte, CA*

PO-GeP-T-175

Characterization of the IMRT and SBRT Performance of a Novel Biology-Guided Radiotherapy (BgRT) Machine Using ArcCHECK

D Zaks1, M Narayanan2, R Bassalow3, O Volotskova4, Y Voronenko5, D Pal6, D Rigie7, J Burns8, A Purwar9, P Olcott10, G Kuduvalli11, (1,2, 5,7-11) RefleXion Medical, Hayward, CA (3) Northwest Medical Physics , Silverdale, WA, (4) Sutter Health Berkeley, CA, (6) GE Healthcare, Menlo Park, CA*

CT-to-Density Calibration & Diagnostic Imaging QA

Featuring Advanced Electron Density Phantom & Gammex® Technologies

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Comparison of An Improved X-Ray Source for Use in All Applications with the Existing Xoft X-Ray Source

L Kelley, T Rusch, R Neimeyer, Xoft, Inc., San Jose, CA*

PO-GeP-I-113 Multi-Energy CT Phantom

Evaluation of Dual-Energy CT Reconstructed Virtual Monoenergetic Images for Radiation Therapy Treatment Planning

B Broekhoven, W Godwin, D McDonald, Medical University of South Carolina, Charleston, SC*

PO-GeP-T-492 Advanced Electron Density Phantom

Impact of Rod Arrangements On Deriving CT to Material Calibration Curve with Dual-Energy Computed Tomography Technique

P Wu1, T Chao1, Y Tsai2, T WU3, W Hsu1, Y Chiang1, C Lee1, (1) Chang Gung University, Guishan Dist., TAO, TW , (2) National Taiwan University Hospital, Taipei, TPQ, TW, (3) Hong Kong Sanatorium & Hospital, Hong Kong, HK*

PO-GeP-T-545 Advanced Electron Density Phantom

Investigation of the Potential for Dosimetric Accuracy Improvements When Utilizing the Gammex 1467 Advanced Electron Density Phantom for CT Number Conversions of High-Density Biologic Material

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BReP-SNAP-I-34 CT ACR 464 Phantom

Noise Power Spectrum Analysis

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PO-GeP-I-179 Multi-Energy CT Phantom

Quantitative Evaluation of TrueFidelity (Deep Learning Image Reconstruction) for Gemstone Spectral Imaging

B Nett, J Tang, P Prakash, GE Healthcare Technologies, Waukesha, WI*

PO-GeP-M-359 Multi-Energy CT Phantom

Raw-Data Effective Atomic Number and Electron Density Assessment Accuracy: A Phantom Study

C Schaeffer, S Leon, C Olguin, M Arreola, University of Florida, Gainesville, FL*

PO-GeP-I-209 Multi-Energy CT Phantom

The Effect of Reconstruction Filters On Dual Energy CT Images From a Single-Source Sequential System

C Olguin, I Barreto, S Leon, C Schaeffer, A Heshmat, M Arreola, University of Florida College of Medicine, Gainesville, FL*

PO-GeP-T-662 Multi-Energy CT Phantom

Proton Dose Calculation with Dual Energy CT Using Scripting

A Kassaee1, C Cheng2, S O'Reilly3, L Yin4, L Dong5, J Zou6, R Hytonen7, B Teo8, (1) Glenmoore, PA, (2,3,5,6,8) University of Pennsylvania, Philadelphia, PA, (4) The Hospital of the University of Pennsylvania, Philadelphia, PA, (7) Varian*

PO-GeP-T-666 Advanced Electron Density Phantom

Proton Treatment Planning With Extended HU Stoichiometric Method

K Lai, S Petro, M Leyva, Provision Center for Proton Therapy, Knoxville, TN*

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Stopping Power Estimation for Carbon Ion Beam Therapy Using Pseudo-Triple Energy CT

Y Kim, J Kim, S Cho, KAISTDaejonKR*

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The Optimization of Spectra Gap for Proton Stopping Power Estimation Using Dual-Energy CT Image Domain Method

D Han1, S Zhang2, K Ding3, (1,3) Johns Hopkins University, Baltimore, MD, (2) Washington University Saint Louis, Saint Louis*

PO-GeP-P-48 Advanced Electron Density Phantom

What Is An Appropriate Tolerance Level for Hounsfield Units QA of the CT Scanner for Treatment Planning?

C Kim1, Y Na2, (1) Icahn School of Medicine at Mount Sinai, New York, NY, (2) Mount Sinai Downtown, New York, NY*

BReP-SNAP-I-36 Mercury 4.0 Phantom

Parameterizing Size-Based Variations in CT Number

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