

## PSMMP PUBLICATIONS 2020

(Students names are underlined)

- *Dosimetric comparison of treatment plans computed with Finite Size Pencil Beam and Monte Carlo algorithms using the InCiseT Multileaf collimator equipped CyberKnife® system, Kalpani Udeni Galpayage, Charles Shang, Theodora Leventouri, Journal of Medical Physics, **45** March 3, (2020).*
- *Stereotactic Body Radiation Therapy (SBRT) Lung Cancer Treatment Plans Comparison between HD MLC and Normal MLC, M Pudasaini, S Pella, T Leventouri, W Muhammad, Medical Physics **47** (2020).*
- *Investigation of Carbon Ion Radiation Therapy Range Uncertainties Via Prompt Gamma Rays Monitoring P Galanakou, T Leventouri, W Muhammad, Medical Physics **47** (2020).*
- *Monte Carlo Simulations of Varian Pro-Beam Compact Single-Room Proton Therapy System, S. String, W. Muhammad, C. Shang Medical Physics (2020).*

### **2020 AAPM Annual (Virtual Presentations)**

- *Potential Efficacy of Monte Carlo Dose Calculation for 6MV FFF Beam of M6 CyberKnife using BEAMnrc and DOSXYZnrc in EGSnrc Code System, Neupane T, Shang C, Muhammad W, Leventouri T.*
- *Stereotactic Body Radiation Therapy (SBRT) Lung Cancer Treatment Plans Comparison between HD MLC and Normal MLC, M. Pudasaini, S. Pella, Th. Leventouri, W. Muhammad.*
- *Monitoring Prompt Gamma (PG) emission for reducing range uncertainties of carbon ion radiation for cancer treatments, P. Galanakou, T. Leventouri, W. Muhammad.*
- *Building a Dose Verification Model for M6 Cyberknife System using Monte Carlo Simulation. Neupane T, Shang C, Muhammad W, Leventouri T, in the Joint AAPM/COMP.*

### **2020 APS March Meeting (Virtual Presentations)**

- *Characterization of neuroblastoma SH-SY5Y cell lines using dielectrophoresis, Samaneh Rikhtehgaran, Luc T Wille, Th. Leventouri, Jianning Wei, E Du.*
- *Potential Efficacy of Monte Carlo Dose Calculation for 6MV FFF Beam of M6 CyberKnife using BEAMnrc and DOSXYZnrc in EGSnrc Code System, Neupane T, Shang C, Muhammad W, Leventouri T.*
- *Stereotactic Body Radiation Therapy (SBRT) Lung Cancer Treatment Plans Comparison between HD MLC and Normal MLC, M. Pudasaini, S. Pella, Th. Leventouri, W. Muhammad.*
- *Monitoring Prompt Gamma (PG) emission for reducing range uncertainties of carbon ion radiation for cancer treatments, P. Galanakou, T. Leventouri, W. Muhammad.*

### **2020 FLAAPM, Spring Meeting, February 28-29, Orlando FL (in person)**

- *Potential Efficacy of Monte Carlo Dose Calculation for 6MV FFF Beam of M6 CyberKnife using BEAMnrc and DOSXYZnrc in EGSnrc Code System, Neupane T, Shang C, Muhammad W, Leventouri T.*
- *Low energy proton beam contribution to the Spread-Out Bragg Peak P. Galanakou, Th. Leventouri, S. String, W. Muhammad, FLAAPM, 2020.*
- *Potential Efficacy of Monte Carlo Dose Calculation for 6MV FFF Beam of M6 CyberKnife using BEAMnrc and DOSXYZnrc in EGSnrc Code System, Neupane T, Shang C, Muhammad W, Leventouri T.*

#### PSMMP PUBLICATIONS 2019

- *A study of wavelet-based denoising and a new shrinkage function for low-dose CT scans Mohammadi, Sadegh; Leventouri, Theodora, Biomedical Physics & Engineering Express, BPEX-101275.R2, (2019).*

#### **AAPM Spring Meeting April 7–10, 2018 Las Vegas, NV**

- *Potential Efficacy of Monte Carlo Dose Calculations of 6MV FFF Photon Beam of M6™ CyberKnife® using the EGSnrc Program, T. Neupane, M. Rahman, C. Shang, T. Leventouri.*

#### **FL-AAPM Fall Meeting, September 26-27, 2019, St. Petersburg, FL**

- *A GPU-based Simulating Annealing Algorithm for Intensity Modulated Radiation Therapy optimization, P. Galanakou, Th. Leventouri*
- *CT Calibration Curve for Proton Therapy Treatment Planning, Ghasemi M. Ghonchehnazi, Evans Grant, Charles Shang.*
- *Development of a Microfluidic Device to Sort Sperm based on their Swimming Potential against the Flow, Afrouz Ataei, A.W.C. Lau, W. Asghar.*

#### PSMMP PUBLICATIONS 2018

- *A Fast GPU Point-cloud Registration Algorithm, Md Mushfiqur Rahman Panagiota Galanakou, Georgios Kalantzis, 2018 19th IEEE/ACIS International Conference on Software Engineering, Artificial Intelligence, Networking and Parallel/Distributed Computing (SNPD).*

#### **Journal extended Abstracts**

- *A Dosimetric Comparison of IMR Vs VMAT Optimization in Early Stage Whole Breast Cancer, S Pella, N Moshiri, T Leventouri, SU-I-GPD-P-18 Medical Physics **45**, 2018*
- *Dosimetric Evaluations of the Bladder and Rectum in Brachytherapy Treatments Using Multi-Lumen Cylinders, N Dumitru1, M Shojaei, S Pella, T Leventouri, SU-I-GPD-T-38 Medical Physics **45** (2018).*
- *Dose Rate Dosimetric Effects During the 6 MV Flattening Filter Free RapidArc-Based Stereotactic Body Radiation Therapy On Lung N Dumitru,*

M Pudasaini, S Pella, T Leventouri, SU-I-GPD-T-403 Medical Physics **45**, (2018).

- *Potential Efficacy of Monte Carlo Dose Calculations of 6MV FFF Photon Beam of M6™ CyberKnife® using the EGSnrc Program*, T. Neupane, M. Rahman, C. Shang, T. Leventouri, AAPM Spring Meeting April 7–10, 2018, Las Vegas, NV.
- *Dosimetry Effects of Small Field Sizes Between Treatment Plans Computed with Finite Size Pencil Beam Algorithm (FSPB) and Monte Carlo Algorithm (MC) Using InCise™ Multileaf Collimators Equipped CyberKnife System (CK-MLC)*, K Galpayage Dona, C Shang, Z Christ, A Shramm, B Erika, J Cole, B Rashmi, M Kasper.
- *A study on the Consistency of Treatment Planning and Delivery for Endometrial Cancer treatments with Multi-Lumen Cylinders for High Dose Rate Brachytherapy* ECMP 2018 (European Congress of Medical Physics) Copenhagen, Denmark, Aug 23 -25 Nicolae Dumitru, Marjan Shojaei, Silvia Pella, Th. Leventouri.

#### **FL-AAPM Spring Meeting February 22-24, 2018, Orlando FL**

- *Selection of Functional Human Sperm with Microfluidic Sorting Device* A Ataei, AWC Lau, Th Leventouri, W Asghar, S Pella
- *Radio-Biological Consequences Due To Applicator Displacement In Savi Treatments With APBI For Under Evaluated Applicators At The Cavity Evaluation Process*. P. Galanakou, S. Pella, Th. Leventouri
- *Dosimetric and Radiobiological Effect Differences between Plans from High Definition MLC and Standard MLC for SBRT Lung Cancer*, M. Pudasaini, N. Dumitru, S. Pella, Th. Leventouri
- *Medical Physics Computational Research*, M. Rahman, G. Galanakou, G. Gibbard, Th. Leventouri, G. Kalantzis

#### PSMMP PUBLICATIONS 2017

- *A GPU accelerated simulation annealing algorithm for IMRT optimization*, P. Galanakou, T. Leventouri, A. Georgakilas, G. Kalantzis, (IEEE proc. SNPD 2017).
- *A Novel Test to Verify the Accuracy and Limitations of the Cyberknife M6 Fiducial Synchrony® Respiratory Tracking for Linear and Rotational Respiratory Tumor Motion*. G Gibbard, C Shang IJROBP **99** (2), E663; 2017.
- *Radiobiological plan evaluation parameters for fractionated highdose rate gyn brachytherapy*, M. Shojaei, M. Rahman, S. Pella, G. Kalantzis (ICSHM 2017).

#### **Journal extended Abstracts**

- *Effects of Therapeutic Radiation On Sperm in Prostate External Radiotherapy* SU-I-GPD-J-92 Medical Physics **44**, 2017. A Ataei\*, T Leventouri, S Pella.
- *Implementation of a Parallel Simulating Annealing Algorithm for Intensity Modulated Radiation Therapy Optimization*, SU-I-GPD-J-99, Medical Physics **44**, 2017, P Galanakou\*, T Leventouri, G Kalantzis.
- *Consistency of Treatment Volume Vs. Bladder and Rectum Anatomical Variations with Fractionated High-Dose Rate GYN Brachytherapy Using Multi Lumen Cylinders*, SU-I-GPD-J-104, Medical Physics **44**, 2017, M Shojaei\*, N Dumitru, S Pella, T Leventouri
- *Dosimetric Implications of the Organs at Risk in Vaginal Cuff Brachytherapy with Multi-Lumen Cylinder*, SU-I-GPD-T-37, Medical Physics **44**, 2017, N Dumitru, M Shojaei, S Pella, T Leventouri
- *The Consistency Dosimetric Analysis of the Accelerated Breast Brachytherapy*, J. Pinder, S. Chandrasekara, M. Hyvärinen, S. Pella, T. Leventouri, ESTRO 36, 5 - 9 May 2017, Vienna Austria.

#### **FL-AAPM Spring Meeting April 28-30, 2017, Orlando FL**

- *Matlab toolkit for physics QA*. M. Mushfiqur Rahman, T. Leventouri, Georgios Kalantzis.
- *Evaluation of Sperm Quality Affected by Therapeutic Radiation* A. Ataei, S. Pella, Th. Leventouri.
- *Impact of the Dosimetric Consequences From Minimal Displacements throughout the Treatment Time in APBI With Savi Applicators*, Shereen Chandrasekara, Silvia Pella, Janeil Pinder.
- *The Consistency Dosimetric Analysis of the Accelerated Breast Brachytherapy*, J.Pinder, S. Chandrasekara, M. Hyvärinen, S. Pella, Th. Leventouri.
- *The Consistency of Treatment Volume with Fractionated High-Dose Rate GYN Brachytherapy Using Multi Lumen Cylinders*, M. Shojaei, N. Dumitru, M. Hyvarinen, J. Pinder, S. Pella, Th. Leventouri.

#### **PSMMP PUBLICATIONS 2016**

- *"The Advantages of Collimator Optimization for Intensity Modulated Radiation Therapy"* International Journal of Cancer Therapy and Oncology (IJCTO). Brian E. Doozan, 2016, submitted.
- *"Phantom Study incorporating a diode array into the TPS for patient-specific QA"*, C. Casey, Z. Ouhib, Th. Leventouri, J. Applied Clinical Medical Physics (JACMP), submitted 2016.
- *Dosimetric and radiobiological comparison of CyberKnife M6™ InCise multileaf collimator over IRIS™ variable collimator in prostate stereotactic body radiation therapy*, Vindu Kathriarachchi, Charles Shang, Grant Evans, Th. Leventouri, and G. Kalantzis, J Med Phys **41**, 135-143

(2016).

### **International/National Meetings**

#### **AAPM 2016 July 31-August 4, 2016, Washington D.C.**

- *Impact Of The Dosimetric Consequences From Minimal Displacements Throughout The Treatment Time In APBI With SAVI Applicators - S Chandrasekara, S Pella, M Hyvarinen, J Pinder.*
- *ACCELERATED PARTIAL BREAST IRRADIATION USING SAVI, MULTI LUMEN MAMMOSITE AND CONTURA APPLICATORS S. Pella (invited speaker), A. Kyriacou, M. Chilukuri.*
- *The Importance of Immobilization Devices in Brachytherapy Treatments of Vaginal Cuff - M Shojaei, N Dumitru, S Pella, A Bacala.*
- *The Consistency Dosimetric Analysis of the Accelerated Breast Brachytherapy - J Pinder, S Chandrasekara, S Pella, A Bacala.*
- *A Study of the Consistency of Brachytherapy Treatments for Vaginal Cuff M Shojaei, S Pella, N Dumitru, A Bacala.*
- *A Novel Test for Coincidence Between Light Fields and Electron Radiation Fields - G Gibbard, C Shang, S Khanal.*
- *A Technique for Modeling a Diode Array Into the TPS for Lung SBRT Patient Specific QA - C Curley, Z Ouhib, T Leventouri.*
- *A Potential Real Time AQA for Cyberknife Cones and MLC Based Treatments - C Shang, G Gibbard, J Cole, A Schramm, T Leventouri, S Khanal.*

#### **2016 ASTRO Annual Meeting, September 25-28, Boston MA**

- *THE IMPORTANCE OF LOCALIZATION AND IMMOBILIZATION IN TREATMENT FOR ENDOMETRIAL CANCER WITH HDR BRACHYTHERAPY USING MULTI LUMEN CYLINDERS, N. Dumitru, M. Hyvarin, S. Pella, M. Shojaei.  
ABS World Annual Congress, June 27-28, 2016, San Francisco, CA*
- *IMPACT OF THE DOSIMETRIC CONSEQUENCES FROM MINIMAL DISPLACEMENTS THROUGHOUT THE TREATMENT TIME IN APBI WITH SAVI APPLICATORS S. Chandrasekara, S. Pella, M. Hyvarin.*
- *DOSIMETRIC IMPLICATIONS OF THE ORGANS AT RISK IN ADJUVANT VAGINAL CUFF BRACHYTHERAPY WITH MULTI LUMEN CYLINDER APPLICATORS, N. Dumitru, M. Hyvarin, S. Pella, M. Shojaei.*

#### **2016 AAMD Annual Meeting, June 12-16, Atlanta GA**

- *A DOSIMETRIC/BIOLOGICAL COMPARISON OF IMRT VERSUS RAPID ARC OPTIMIZATION IN WHOLE BREAST WITH AXILLARY NODE IRRADIATION S. Pella (invited speaker), N. Moshiri.*
- *Does Image Guidance Need to be Performed Before Every Session in Accelerated Partial Breast Irradiation With High-Dose-rate Brachytherapy? Implications on Treatment Planning and Fractional CT Scanning, S. Chandrasekara, J Pinder, M Shojaei, Silvia Pella, International journal of radiation oncology, biology, physics **96**(2S): E546 55 October 2016 57. DOI: 10.1016/j.ijrobp.2016.06.1995.*

- The Importance of Localization and Immobilization in Treatment for Endometrial Cancer With High-Dose-Rate Brachytherapy Using Multilumen Cylinders, M. Shojaei, N. Dumitru, S. Chandrasekara, J. Pinder, M. Hyvarin, C. Curley, S. Pella, International Journal of Radiation Oncology, Biology, physics **96** (2S): E688: 55 October 2016, 57 DOI: 10.1016/j.ijrobp.2016.06.2350.

### **2016 ESTRO Annual Meeting April 29-May 3, Turin, Italy**

DOSIMETRIC CONSEQUENCES FROM MINIMAL DISPLACEMENTS IN APBI BRACHYTHERAPY USING THE SAVI APPLICATOR S. Chandrasekara, S. Pella, J. Pindel.

### **2016 FLAAPM Spring Meeting April 28-30, Orlando FL**

Oral Presentations

- Suraj Khanal, *A potential real-time AQA for Cyberknife Cones and MLC based treatments.*
- Stephanie Lewkowicz, *Sparse Modeling Applied to Patient Identification for Safety in Medical Physics Treatment.*
- Casey Curley, *Modeling the measurement environment: a dosimetric study for lung stereotactic body radiation therapy patient specific quality assurance.*

Poster Presentations

- Shereen Chandrasekara, *Assess variation in dose for OARs and importance of immobilization when using SAVI applicators*
- Grant Gibbard, *Validation of a novel real time QA device*
- Sadegh Mohammadi, *Investigation of 3 penalty methods for IMRT treatment planning*

### **PSMMP PUBLICATIONS 2015**

- *Evaluation of surface dose outside the treatment area for five breast cancer irradiation modalities using thermo-luminescent dosimeters*, Suraj P. Khanal, Zoubir Ouhib, Rashmi K Benda, Th. Leventouri, Intern. J. Cancer Therapy and Oncology, **3**, 2015 ISSN 2330-4049.
- *A computational study on different penalty approaches for constrained optimization in radiation therapy treatment planning with a simulated annealing algorithm*, Sadegh Mohamadi, Charles Shang, Zoubir Ouhib, Th. Leventouri, Georgios Kalantzis, 16th IEEE/ACIS International Conference on Software Engineering, Artificial Intelligence, Networking and Parallel/ Distributed Computing (SNPD) June 1-3, 2015, Takamatsu, Japan DOI:10.1109/SNPD.2015.7176174.

- *A GPU-based Pencil Beam Algorithm for Dose Calculations in Proton Radiation Therapy*, Georgios Kalantzis, Th. Leventouri, Hidenobu Tachibana, Charles Shang, Int. J. of Networked and Distributed Computing, **3** 243-249, 2015 ISSN: 2211-7946.
- *A computational tool for patient specific dosimetry and radiobiological modeling of selective internal radiation therapy with <sup>90</sup>Y microspheres*, Georgios Kalantzis, Th. Leventouri, Aditiya Apte, Charles Shang, Appl. Radiation and Isotopes, **105**, 123-129, 2015 DOI: 10.1016/j.apradiso.2015.08.009.
- *Dosimetric Evaluations Due to Minimal Displacements in Gynecological High Dose Rate Brachytherapy*, Nicolae Dumitru, Silvia Pella, Mikko Hyvarinen, Samantha Long, Th. Leventouri, Brachytherapy, **14**, 102, 2015.
- *Will CyberKnife M6™ Multileaf collimator offer advantages over IRIS™ collimator in prostate SBRT?* Kathriarachchi V, Shang CY, Kalantzis G, Leventouri Th., Med. Phys. **42**, AAPM Spring Clinical Meeting, St. Louis MO, March 7-10, 2015.
- *Should We Use RapidArc (VMAT) for Breast Treatments? A Dosimetric Comparison of IMRT Versus VMAT Optimization in Whole Breast Irradiation of Early Stage Breast Cancer*, SU-E-T-693:N Moshiri Sedeh, S Pella, T Leventouri, D Littlejohn and T Costantino Med. Phys. **42**, 3496 (2015); <http://dx.doi.org/10.1118/1.4925057>
- *A GPU-Based Pencil Beam Algorithm for Dose Calculations in Proton Radiation Therapy*, G Kalantzis, T Leventouri, H Tachibana and C Shang, Med. Phys. **42**, SU-E-T-373339 (2015); <http://dx.doi.org/10.1118/1.4924398>
- *Variations of Cardiac Dose at Different Respiratory Status in CyberKnife M6 Treatment Plans for Accelerated Partial Breast Irradiation (APBI)*, S Long, C Shang, G Evans and T Leventouri, Med. Phys. **42**, SU-E-T-797: 3521 (2015); <http://dx.doi.org/10.1118/1.4925161>.

#### BOOK CHAPTER

*A GPU-based pencil beam algorithm for dose calculations of proton therapy* G. Kalantzis, T. Leventouri, H. Tachibana, C. Shang, (Studies in Computational Intelligence Vol. **612**, Editor: Roger Lee, Springer, 2015).

#### International/National Meetings

- *Will CyberKnife M6™ Multileaf collimator offer advantages over IRIS™ collimator in prostate SBRT?*, Kathriarachchi V, Shang CY, Kalantzis G, Leventouri Th. AAPM Spring Clinical Meeting, St. Louis MO, March 7-10, 2015
- *Dosimetric Consequences from Minimal Displacements in APBI with SAVI applicators* ABS Annual meeting – Orlando FL

- *Will CyberKnife M6™ Multileaf collimator offer advantages over IRIS™ collimator in prostate SBRT?*, Kathriarachchi V, Shang CY, Kalantzis G, Leventouri Th. FLAAPM Annual Meeting, Orlando FL, May 1-2, 2015.
- *A Dosimetric Study of a Heterogeneous Phantom for Lung Stereotactic Body Radiation Therapy Comparing Monte Carlo and Pencil Beam Calculations to Dose Distributions Measured with a 2-D Diode Array*, Casey Curley, Zoubir Ouhib, Th. Leventouri, FLAAPM Annual Meeting, Orlando FL, May 1-2, 2015.
- *Variations of Cardiac Dose at Different Respiratory Status in CyberKnife M6 Treatment Plans for Accelerated Partial Breast Irradiation (APBI)*, S Long, C Shang, G Evans and T Leventouri, FLAAPM Annual Meeting, Orlando FL, May 1-2, 2015.
- *Will CyberKnife M6™ Multileaf collimator offer advantages over IRIS™ collimator in prostate SBRT?* Kathriarachchi V, Shang CY, Leventouri Th., Kalantzis G, FLAAPM Annual Meeting, Orlando FL, May 1-2, 2015.

#### PSMMP PUBLICATIONS 2014

- DOSIMETRIC CONSEQUENCES FROM MINIMAL DISPLACEMENTS IN APBS WITH SAVI APPLICATORS, M. Hyvarinen S. Pella, N. Dumitru, Th. Leventouri, Annual Radiation Safety International meeting, 2014 Varna Bulgaria.
- PLANNING TECHNIQUES WITH RESULTS IN ECLIPSE AND BRAINLAB FOR SBRT LUNG TUMORS, B. Doozan, S. Pella (invited speaker), Bay Care Radiation Oncology 2014.
- MOTION CONTROL CHALLENGES IN HDR BRACHYTHERAPY FOR ABPI TREATMENT USING THE SAVI APPLICATORS, M. Hyvarinen S. Pella, N. Dumitru, Th. Leventouri, AAPM, 2014 annual.
- CHALLENGES IN MEASURING OUTPUT FACTORS FOR SMALL FIELDS UNDER 1 CM C. Smith, S. Pella, A. Bacala, Th. Leventouri, AAPM, 2014 annual.
- IMPROVING MOTION CONTROL IN HDR BRACHYTHERAPY FOR MULTY LUMEN CYLINDERS, M. Hyvarinen S. Pella, N. Dumitru, Th. Leventouri, AAPM, 2014 annual.
- PLANNING TECHNIQUES WITH RESULTS IN ECLIPSE AND BRAINLAB FOR SBRT LUNG TUMORS, S. Pella, B. Doozan, Bay Care Radiation Oncology, 2014 annual.
- INVESTIGATION OF DOSE VARIATION WITH MINOR DISPLACEMENT IN HIGH DOSE RATE BRACHYTHERAPY, M. Hyvarinen, N. Dumitru, S. Long, C. Curley, S. Pella, Th. Leventouri, International RSNA, Varna, 2014.
- CHALLENGES IN COMMISSIONING SMALL FIELDS FOR SRS TREATMENT PLANNING SYSTEMS C. Smith, A. Bacala, S. Pella, AAPM Spring, 2014.
- THE IMPORTANCE OF MOTION CONTROL IN HIGH DOSE RATE BRACHYTHERAPY TREATMENTS, M. Hyvarinen, N. Dumitru, S. Long, S. Pella, Th. Leventouri, ABS, 2014 annual.



- *Measuring Output Factors for Photon Fields Smaller than 10 cm × 10 cm*, B Doozan, S Pella, A Bacala, Th. Leventouri, C Smith, J. Applied Clinical Medical Physics, **15**, No. 3, 2014.