Scientific Program of AOCMP 2015

Friday 6, November, 2015

**Therapy Session 1**

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<tr>
<th>Time</th>
<th>Chairperson</th>
<th>Speaker(s)</th>
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<tbody>
<tr>
<td>08:30~10:00AM</td>
<td>Sen Bai</td>
<td>Arun Chougule</td>
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<td></td>
<td></td>
<td><strong>1. Luminescence dosimetry - medical applications (Invited Lecture, 20 minutes)</strong></td>
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<td>Shouping Xu</td>
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<td><strong>2. Improvement and evaluation of deformation image registration on parotid glands during radiation therapy for nasopharyngeal cancer</strong></td>
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<td>Yu Yun Noh</td>
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<td><strong>3. Development of the real time patient alignment monitoring system using Room laser and Photo sensors</strong></td>
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<td>Wujun Sun</td>
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<td><strong>4. The dosimetric research of target regions and bone in three and two-dimensional brachytherapy techniques for soft tissue sarcomas</strong></td>
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<td>Hongdong Liu</td>
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<td><strong>5. A Preliminary Study of Monte Carlo Simulation of the Treatment Nozzle of a Carbon-ion Facility in Lanzhou Using TOPAS</strong></td>
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<td>Shanpat Sangudsup</td>
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<td><strong>6. Impact of SUVmax on 18F-FDG PET Target Volume Delineation in Radiotherapy Treatment Planning of NSCLC Patients</strong></td>
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<td>Xiaoyun Di</td>
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<td><strong>7. The scatter factor of the afterloading Iridium192 source calibration in air</strong></td>
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<td>Zhengdong Zhou</td>
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<td><strong>8. An effective calculation method for OVH descriptor and its application in IMRT plan retrieval</strong></td>
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**Imaging Session 1**

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<tr>
<th>Time</th>
<th>Chairperson</th>
<th>Speaker(s)</th>
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<tbody>
<tr>
<td>08:30~10:00AM</td>
<td>Yu Wen, Yaoqin Xie</td>
<td>Yu Wen</td>
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<td><strong>1. Invited Lecture, 20 minutes</strong></td>
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<td><strong>2. Application of a simplified ultra-small x-ray scattering imaging using Bragg case analyzer to a breast cancer specimen</strong></td>
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</table>
3. Changes of spleens's morphology and density depicted by phase-contrast x-ray ct

Tohoru Takeda

4. Interpolation method in sparse-angular spectral CT with an energy-resolved photon-counting detector

Dohyeon Kim

5. A feasibility study for three material decomposition in dual energy digital mammography

Donghoon Lee

6. Characterization of different types of x-ray detector for prototype DBT (digital breast tomosynthesis) system

Ye-seul Kim

7. Evaluation of Effective Dose from CT Scans for Overweight and Obese Patients Using the VirtualDose Software

Baohui Liang

8. Investigation of the temperature dependency with scanning MRI of the polymer gels

Hiraku kawamura

10:00~10:30AM Refreshment Break / Poster Session

10:30~12:00AM Therapy Session 2

Room: Grand Ballroom 1

Chairperson: Xiaoyun Di, Weigang Hu

1. Preparedness for Nuclear & Radiological Emergency – Challenging the Medical Physicist (Invited Lecture, 20 minutes)

Fridtjof Nüsslin

2. Accuracy verification of a collision-detection simulator between treatment unit and patient for dynamic wave arc irradiation

Daigo Watanabe

3. A preliminary study to improve 2D IMRT QA accuracy through the algebraic approach for geometric correlation of distribution

Hyun-Jae Koo

4. Reproducibility of breathing guidance method for respiratory motion management in synchrotron-based gated heavy-ion beam delivery

Pengbo He

5. Accumulative imaging dose and lifetime attributable risk of cancer incidence in image-guided radiotherapy of cancers

Li Zhou
6. A novel dMLC-based real-time tracking and Overlapped Projection Ratio based gating radiotherapy for mobile tumor
   
   Zhengdong Zhou

7. Characteristics of Fiber-Optic Radiation Senser for Proton Therapeutic Beam
   
   Dongho Shin

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**Imaging Session 2**

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<tr>
<th>Time</th>
<th>Activity</th>
<th>Speaker(s)</th>
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<tbody>
<tr>
<td>10:30~12:00AM</td>
<td>Reduction in X-ray Scatter and Beam Hardening for Low-Dose Cone-Beam CT</td>
<td>Wenlei Liu</td>
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<td>The potential of spectral computed tomography for quantitative decomposition of vulnerable plaque using a dual-energy technique: Monte Carlo Simulation study</td>
<td>Byungdu Jo</td>
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<td>Quantitative Study on Accurate Reconstruction Sampling Condition by Verifying Solution Uniqueness in Limited-view CT</td>
<td>Wenkun Zhang</td>
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<td>Ordered-subset simultaneous algebraic reconstruction technique(OS-SART) in a prototype digital breast tomosynthesis (DBT) system</td>
<td>Sunghoon Choi</td>
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<td>Multiscale Penalized Weighted Least-Squares Image-domain Decomposition for Dual-energy CT</td>
<td>Shaojie Tang</td>
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<td>Joint Robust PCA and Total Variation Constraint Method based Multi-energy CT Reconstruction with Segmental Scanning Protocol</td>
<td>Bin Li</td>
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**Therapy Session 3**

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<tr>
<th>Time</th>
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<tr>
<td>13:30~15:00PM</td>
<td>Particle Radiotherapy, an Emerging Technology for Treatment of Cancer (Invited Lecture, 20 minutes)</td>
<td>Arabinda Kumar Rath</td>
</tr>
</tbody>
</table>
2. Quality assurance of simultaneous treatment of multiple targets planned with mono isocenter using three dimensional conformal radiotherapy (3DCRT) technique

   Srinivas Challapalli

3. Monitor unit optimization in stereotactic body radiotherapy for small peripheral non-small cell lung cancer patients

   Baotian Huang

4. Intelligence Guided Beam Angle Optimization in Treatment Planning of Intensity-Modulated Radiation Therapy

   Hui Yan

5. Radiobiological modeling analysis of the optimal fraction scheme in small peripheral non-small cell lung cancer patients undergoing stereotactic body radiotherapy

   Baotian Huang

6. Tumor location prediction using natural respiratory volume for respiratory gated radiation therapy (RGRT): System verification

   Moo-Sub Kim

7. Intensity-modulated radiotherapy for gliomas: dosimetric effects of changes in gross tumor volume on organs at risk and healthy brain tissue

   Jidong Hong

8. Integration of Magnetic Resonance Imaging and Radiation Therapy Accelerator

   Yafen Li

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**TG100 Workshop**

13:30~15:00PM  
Room: Grand Ballroom 2

Chairperson: M. Saiful Huq, Yong Yang

**Risk based quality management: Recommendations of the AAPM**

**Task Group 100 protocol**

Professional societies, such as the American Association of Physicists in Medicine (AAPM), the International Atomic Energy Agency (IAEA), the European Society for Therapeutic Radiology and Oncology (ESTRO) have published many quality-assurance and quality control guidance documents that focus on performing device-specific quality assurance measurements. Analyses of many radiation therapy incidents show that they are frequently caused by flaws in the overall therapy process rather than by equipment failures detectable by traditional physics QA. Task Group 100 (TG 100) of the AAPM has developed a new quality management protocol, which recommends that institutions perform hazard analysis for broad classes of radiotherapy procedures and develop quality management programs based on this hazard analysis. TG100 recommended the use of four industrial engineering tools for risk analysis and then establishment of a quality management program that best avoids or intercepts the faults and risks that have been identified in the overall process using these tools. The
recommended tools are process mapping, failure modes and effects analysis (FMEA) and fault tree analysis (FTA). These tools can be easily adapted to radiation therapy practices because of their simplicity and effectiveness in providing efficient ways to enhance the safety and quality of treatment processes. This workshop will give an overview of these tools and how these tools can be used to develop a risk based quality management program in radiation therapy.

Learning objectives:
1. Learn how to design a process map for a radiotherapy process
2. Learn how to perform a FMEA analysis for a given process
3. Learn the use of Fault Tree Analysis
4. Learn how to design a quality-management program based upon the information obtained from process mapping, FMEA and FTA.

RTIS Workshop
13:30~15:00PM  Room: Yanta Room
Chairperson: Xuejun Qiu, Peng Huang
1. The clinical requirements based radiotherapy workflow development: preliminary experience
   Weigang Hu
2. The implementation of an in-house developed radiation therapy information management system (RTIMS) based on the workflow of radiation therapy
   Qinhong Wu
3. Patient safety and information management based on local radiation therapy information system
   Shouping Xu
4. Opportunities and challenges of informatization construction in radiation therapy
   Wei Wang
5. Application and research of a new technology of information system in radiation therapy
   Yu Zhang
6. Construction and application of radiotherapy information system
   Bin Tang

15:00~15:30PM   Refreshment Break / Poster Session

Therapy Session 4
15:30~17:00PM  Room: Grand Ballroom 1
Chairperson: Lei Xing, Xiance Jin
1. Determination of the reference air kerma rate for Ir-192 and Co-60 HDR sources using three different international protocols (Invited Lecture, 20
minutes)

Hasin Anupama Azhari

2. Development of an advanced deformable phantom to analyze the dose difference by respiratory motion: Design and evaluating the characteristics
   Dong-Seok Shin

3. Dosimetric Comparison study on different Intensity-Modulated Radiation therapy Planning for liver tumor
   Fushan Zhai

4. Developing a pencil beam dose calculation algorithm for a robotic radiosurgery system
   Bin Liang

5. A GPU-based collapsed-cone convolution/superposition dose engine for a robotic radiosurgery system
   Yongbao Li

6. Analysis of dosimetric factors for acute radiation-induced small bowel damage following intensity-modulated radiotherapy in patients with abdominal-and-pelvic tumor
   Fushan Zhai

7. Prompt gamma ray imaging for verification of proton boron fusion therapy: A Monte Carlo study
   Han-Back Shin

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**New Technology/ Radiobiology & others**

15:30~17:00PM
Room: Grand Ballroom 2

Chairperson: Li Tan, Hui Yan

1. An automated scoring of radiation induced micronuclei in binucleated human lymphocytes
   Mohammad Taghi Bahreyni Toossi

2. CHOP and JNK mediate radiation-induced Apoptosis and Autophagy via unfolded protein response in Breast Cancer Cells
   Feifei Li

3. Development of 3D Biological Effective Dose Distribution Software Program
   Patchareewan Khadsiri

4. A Novel design of ultrafast Micro-CT system based on Carbon NanoTube
   Zhicheng Zhang

5. Application of virtual reality technology in the controls of respiration motion in radiotherapy for lung cancer patients
   Rongmao Li

6. Dosimetric comparison of different treatment planning technique for SRS using VMAT
Senthilkumar Natarajan

7. A Pencil Beam Dose Algorithm for Intensity Modulated Proton Therapy Using a Dynamic Scanning Beam Delivery System
   
   Hui Wang

8. The experiment and simulation study of target's biology position with applying high X-Ray energy irradiation
   
   Quanshi Zhang

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**IMPCB Symposium**

15:30~17:00PM  
Room: Yanta Room

Chairperson:  *Raymond Wu, Tae-Suk Suh*

1. Building a strong foundation for IMPCB
   
   Raymond Wu

2. Professional Accreditation of Medical Physicists
   
   Kin Yin Cheung

3. The International Medical Physics Certification Board
   
   Colin G. Orton

4. Education & Training Medical Physicists – the European Approach
   
   Fridtjof Nüsslin

5. The Experience of Korea for the Accreditation of Medical Physics from IMPCB
   
   Tae-Suk Suh

6. Formalization of Medical Physics Credentialing: Lessons from U.S. Experience the Medical Physics Research Perspective
   
   Jeffrey F. Williamson

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18:30~20:30  Reception
**Saturday 7, November, 2015**

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<th>Time</th>
<th>Event</th>
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<tr>
<td>8:30~9:00AM</td>
<td><strong>Open Ceremony</strong> Room: Grand Ballroom</td>
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<td>9:00~10:00AM</td>
<td><strong>Plenary Session 1</strong> Room: Grand Ballroom</td>
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<td>Chairperson: Jianrong Dai, Xiaowu Deng</td>
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<td></td>
<td>1. From Anatomy-Based Dose-Localization to Biology-Guided Radiation Therapy <em>(Invited Lecture, 20 minutes)</em> Jeffrey Williamson</td>
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<td>2. Recent Advances in Radiation Therapy: Treatment Planning, QA and Dose Delivery <em>(Invited Lecture, 20 minutes)</em> Lei Xing</td>
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<td>3. How reliable is volumetric breast density in predicting breast cancer risk? <em>(Invited Lecture, 20 minutes)</em> Kwan-Hoong Ng</td>
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<td>10:00~10:30AM</td>
<td><strong>Refreshment Break / Poster Session</strong></td>
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<td>10:30~12:00AM</td>
<td><strong>Plenary Session 2</strong> Room: Grand Ballroom</td>
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<td>Chairperson: K Y Cheung, Tae-Suk Suh</td>
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<td>1. Diffusion Magnetic Resonance Imaging <em>(Invited Lecture, 20 minutes)</em> Jiahong Gao</td>
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<td>2. To be determined <em>(Invited Lecture, 20 minutes)</em> Tao Xu</td>
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<td>3. To be determined <em>(Invited Lecture, 20 minutes)</em> Yimin Hu</td>
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<td>12:00AM~13:30PM</td>
<td><strong>Lunch</strong></td>
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<td>13:30~15:00PM</td>
<td><strong>Gamma Knife Session</strong> Room: Grand Ballroom</td>
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<td>Chairperson: Tingyi Xia, Mei Shi, Fugen Zhou</td>
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<td>1. Introduce Accurate Radiotherapy Technology Subcommittee, The Gamma Knife Production, Research and Application in China JingBo Kang</td>
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</table>
2. The Clinical Application of Gamma Knife in Tumor of the Head  
   MianShun Pan
3. The Clinical Application of Gamma Knife in Tumor of the Body  
   ZhiXiong Long
4. Gamma Knife Physical Data Detection and Quality Control Guarantee  
   Kai Mao
5. The Experience of Research and Development in Gamma Knife Treatment Planning System  
   Tao Xu
   JianChun Tian

15:00~15:30PM  Refreshment Break / Poster Session

Celebration of International Day of Medical Physics (IDMP)

15:30~17:00PM  Room: Grand Ballroom

Chairperson: Raymond Wu, IMPCB

1. Congratulatory Remarks:
   15:30pm – 15:35pm  Yimin Hu, Congress Chairman
   15:35pm – 15:40pm  KY Cheung, IOMP

2. Forum on Way Forward in Development of Medical Physics
   November 7, the birth date of Madam Marie Sklodowska-Curie, is designated by IOMP as the International Day of Medical Physics (IDMP). The event, which started in 2013, is one of the initiatives taken by IOMP aiming to raise the awareness of the global communities on the important role medical physicist play in healthcare and to promote their profile and visibility in the medical scene. As in previous years, a series of scientific, educational and social activities are being organized around the world to celebrate the occasion. Each IDMP has a different theme of celebration. The theme of IDMP2015 is ‘Better Medical Physics = Better Cancer Care in Radiation Oncology’. This forum is organized in response to the call of IOMP to celebrate the event. It aims to provide a platform for leaders of our profession from different parts of the world to share their vision on the way forward in developing the medical physics profession in their countries/regions.
   15:40pm - 15:50pm  IOMP perspective- KY Cheung, Immediate Past-President, IOMP
   15:50pm - 16:00pm  AFOMP perspective- Tae-Suk Suh, Vice President, AFOMP
   16:00pm - 16:10pm  SEAFOMP perspective- KH Ng, Past-President, SEAFOMP
   16:10pm - 16:20pm  EFOMP perspective, Fridtjof Nuesslin, Past-President, EFOMP
   16:20pm - 16:30pm  AAPM perspective, Jeffrey Williamson, Editor, Medical Physics
   16:30pm - 16:40pm  CSMP perspective, Ruijie Yang, CSMP
   16:40pm - 17:00pm  Roundtable discussion

18:30~20:30  Congress Banquet
Sunday 8, November, 2015

Therapy Session 5

Chairperson: Arun Chougule, Shouping Xu

1. CdTI as a large area detector for both diagnostic imaging and radiation oncology applications? (Invited Lecture, 20 minutes)
   E. Ishmael Parsai

2. High-risk clinical target volume dose accumulation in IMRT and image-guided brachytherapy for cervix cancer: A planning study
   Hao Liu

3. Development of Intensity Modulated Accurate Radiotherapy System ARTS-IMRT
   Ruifen Cao

4. Evaluation of spatially fractionated (GRID) radiotherapy using a multi-leaf collimator with the Vero4DRT
   Hajime Monzen

5. Optimisation of treatment mode applied to post-operative cervical cancer for five-field intensity-modulated radiation therapy technique
   Jun Li

6. Research on Efficacy Evaluation System of Microwave Ablation
   Zhiyu Qian

Nuclear Medicine Session

Chairperson: Jianhua Geng, Lvyi Zhou

1. Nuclear Medicine physics in China (Invited Lecture, 20 minutes)
   Shengzu Chen

2. New time resolution measurement method
   Ze Chen

3. CT-guided MAP reconstruction for high-resolution, low noise PET images
   Mu Chen

4. Design and Implement of SPECT performance testing program
   Shulin Yao

5. A bias reduction reconstruction algorithm for low count PET study
   Wentao Zhu

6. Study and design of cyclotron radiation protection
   Heping Yan

7. Motion Detection and Correction in PET/CT Brain Imaging
   Yang Lv
8. Study of effective dose and influence factors for PET/CT patients
   Ziwen Liang

9. PET/CT Image Registration to Reduce Respiratory Mismatch
   Shuguang Chen

10. Defining radiotherapy target and influence factors on PET images: A Simulation Study
    Jianghua Geng

**10:00~10:30AM  Refreshment Break / Poster Session**

**Therapy Session 6**

10:30~12:00AM  Room: Grand Ballroom 1

Chairperson: Jie Qiu, Ruijie Yang

1. Dosimetry of small photon fields according to the German protocol DIN 6809-8 (2014) and comparison with others protocols (Invited Lecture, 20 minutes)
   Golam Abu Zakaria

2. A Novel Algorithm for Estimating Organ Motion Induced Patient Dose Variance
   Sumin Zhou

3. Measurement verification of treatment planning system dose distribution calculations for brachytherapy employing a shielded applicator
   Hao Liu

4. Scatter correction for clinical cone-beam CT system using a stationary beam block with single scan: gantry wobble estimation
   Xiaokun Liang

5. The impact of plan complexity parameters on the plan quality and deliverability VMAT
   Xiance Jin

6. An IMRT/VMAT technique for the treatment of non-small cell lung cancer
   Ruijie Yang

7. Two types of flattening filter free (FFF) radiation therapy for postoperative treatment of cervical cancer: Tomotherapy vs C-arm based VMAT
   Fuli Zhang

**Imaging Session 3**

10:30~12:00AM  Room: Grand Ballroom 2

Chairperson: Jiahong Gao, Yiping Du

1. Recent Development in Short TE MRI (Invited Lecture, 20 minutes)
   Yiping Du
2. The human brain activation differences evoked by different binocular disparities of stereograms

   Jiajia Liu

3. Single NMR Image Super-resolution Based on Extreme Learning Machine

   Zhiqiong Wang

4. A method for optimizing the scaling factor of dual echoultrashort time echoimaging with rescaled digital subtraction (dUTE-RS)

   Shuo Li

5. Golden ratio based shaking projection k-space sampling trajectory

   Shuo Li

6. Computer-aided diagnosis of liver space-occupying lesions based on ultrasonic medical image analysis

   Yang Yang

7. Simulation of optical properties of brain tissues by Monte-Carlo method

   Yubing Liu

8. XinJiang liver hydatid CT image segmentation based on region growing method

   Elzat Alip

12:00AM~13:30PM   Lunch

**Dosimetry & Radiation Protection**

13:30~15:00PM   Room: Grand Ballroom 1

Chairperson:  Hasin Anupama Azhari, Yong Yang

1. Dosimetry of small photon fields according to DIN 6809-8 [2014] and comparison with other existing protocols  (Invited Lecture, 20 minutes)

   Prof. G.A. Zakaria

2. Study of Dosimetric Characteristics of a commercial OSL system

   Arun Chougule

3. Characterization of Stochastic Noise and Post-Exposure Density Growth for Reflective-Type Radiochromic Film in Therapeutic Photon Beam Dosimetry

   Takeshi Kamomae

4. Circular cones output factor measurement using micro chamber, diodes, plastic scintillator and OSLD

   Dayananda Shamurailatpam

5. Determination of small field output factors in 6 and 10 MV flattening filter free photon beams using various detectors

   Wilai Masa-nga
6. Dosimetric performance of newly developed Farmer type ionization chamber in radiotherapy practice

Sathiyan

7. Improving linear accelerator treatment room shielding with 3D computer aided design

George Warr

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### Imaging Session 4

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<td>13:30~15:00PM</td>
<td>Grand Ballroom 2</td>
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Chairperson:  Fugen Zhou, Enmin Song

1. Research on Automatic Atlas Based Segmentation of Encephalic Tissues
   Meicheng Chu

2. 3D-Grabcut for medical image segmentation
   Shaode Yu

3. Automatic Lung Tumor Localization Based on Gaussian Mixture Model
   Qingyang Wang

4. Comparison of phase retrieval methods in phase contrast imaging
   Sajid Bashir

5. Feature extraction and pattern classification for hepatic cystic echinococcosis in Xinjiang
   Murat HAMIT

6. Classification on CT Image of Xinjiang Local Liver Hydatid Based Feature Extraction and C4.5 Decision Tree
   Ximei Kong

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### Closing Ceremony

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