

【JSRT-JSMP Joint International Conference on Radiological Physics and Technology (ICRPT) Oral】

April 14 (Thu.) 502

MR: Brain

16:10–16:50 Chairperson: Kenichiro Yamamura
Norio Hayashi

- ★ TPI-001 MRI Thermometry Using Diffusion Tensor Imaging for Postoperative Brain Temperature Monitoring
Juntendo University Shuhei Shibukawa
- ★ TPI-002 Variable Flip Angle T_1 mapping without Acquiring Data for B_1 Correction
Tokushima University Nagomi Fukuda
- ★ TPI-003 Decoding the Cortical Complexity of Bilateral DLPFC with Multi-scale Morphometric Analysis
The Chinese University of Hong Kong, Hong Kong Hanna Lu
- ★ TPI-004 Variability of the Corpus Callosum with Gender among the Nepalese Population
National Academy of Medical Sciences, Nepal Anjan Dangal

MR: Miscellaneous

17:00–17:50 Chairperson: Kousaku Saotome
Tatsuya Hayashi

- ★ TPI-005 Multi-parameter Evaluations in a Canine Induced Disc Degeneration Model Using MRI and Macroscopic Observation
Tokai University Hospital Susumu Takano
- ★ TPI-006 Evaluation of Clinical Utility of Free-breathing Dynamic Contrast Imaging Using Gadoteric Acid with Golden-angle-Radial-Sampling and a Compressed Sensing Method
Toranomon Hospital Kei Fukuzawa
- ★ TPI-007 Comparing the Clinical Usefulness of Gradient-Echo Sequence and Spin-Echo Echo Planar Imaging Sequence in Magnetic Resonance Elastography
Toranomon Hospital Ryouna Abe
- ★ TPI-008 Radiomic Feature-based Prediction Model for Malignancy Grade of Parotid Gland Cancer in Preoperative Magnetic Resonance Images
Yamaguchi University Hospital Kojiro Ikushima
- ★ TPI-009 A Study of Ateration in Image Quality According to the Technique Corrections During MRI Examination
Hanseu University, Korea Jin Young Lee

 April 15 (Fri.) 502

Diagnostic Technology-1

8:00–9:00 Chairperson: Masatoshi Kondo
Kenta Takada

- ★ TPI-010 Study of CT-based Thermometry for Visualizing the Human Body on Thermal Resolution
Kitasato University Shinya Mizukami
- ★ TPI-011 Development of Dynamic X-ray Elastography Using Laboratory X-ray Source and Synchrotron Radiation for Soft Tissues and Soft Materials
High Energy Accelerator Research Organization (KEK) Chika Kamezawa
- ★ TPI-012 Gender Estimation from Foramen Magnum Using 3D Computed Tomography Scan Images
National Academy of Medical Sciences, Nepal Anjan Dangal
- ★ TPI-013 Age Estimation Using Deep Learning with MIP Images of the Spine in Postmortem CT Scans
Hiroshima University Ikuo Kawashita
- ★ TPI-014 Usefulness of Fluid Assessment in Sphenoid Sinus Based on Post-mortem Computed Tomography in Cases of Suspected Drowning
Busan Institute, National Forensic Service, Korea Jin-Haeng Heo
- ★ TPI-015 A Fundamental Study of Image Quality Assessment in CBCT Images with Non-Reference Image Quality Metrics Modeled by Radiation Images
Osaka City University Hospital Yusuke Torada

CT: Deep Learning

9:10–10:00 Chairperson: Shohei Kudomi
Wakiko Tani

- ★ TPI-016 Lung Age Estimation of Low-dose Chest CT Images Based on Deep Learning
Kanazawa University Hiroto Mori
- ★ TPI-017 Calculation of Lung Volume in 45,337 Cases of Low-dose Chest CT Using the U-net
Kanazawa University Keiichi Kato
- ★ TPI-018 Variation of CT Value Depending on Position in the X Direction in the Gantry
Meijo Hospital Tomomi Yato
- ★ TPI-019 Automated Detection of Insufficiency Fracture of the Pelvis on Radiograph: Preliminary Study on the Automated Detection of Artificial Fracture Line Using Convolutional Neural Network
Fujita Health University Fumiaki Oba
- ★ TPI-020 Automated Lung Nodule Detection Using Mask R-CNN in PET/CT Images
Fujita Health University Yuki Oshita

Radiotherapy: Imaging

10:10–11:00 Chairperson: Hideyuki Takei
Shinichiro Mori

- ★ TPI-022 Novel Scattered X-ray Model for Cone-beam Computed Tomography
Tokushima University Yuki Inoue
- ★ TPI-023 A Generative Cone-beam Computed Tomography Model
Tokushima University Taisei Shimomura

- ★ TPI-024 Comparison of the Matching Accuracy between 5 Different Deformable Image Registration Algorithms
Fujita Health University Masato Horita
- ★ TPI-025 Exploring the Re-planning Protocol to Manage Inter-fractional Organ Movement during a Course of Intensity Modulated Radiation Therapy for Cervical Cancer
Kyoto University Yukako Kishigami

The 1st ICRPT Special Invited Lecture

12:10–13:00

Chairperson: Rie Tanaka

- ★ TPS The Future of Medical Physics
Duke University Ehsan Samei

Radiotherapy: Miscellaneous

15:40–16:10

Chairperson: Takahiro Kato
Keisuke Yasui

- ★ TPI-026 Dose Estimation for Cone Beam CT in Image-Guided Radiation Therapy Using Mesh-type Reference Computational Phantoms and Assuming Head and Neck Cancer for Patient
Kyushu University Ceyda Cumur
- ★ TPI-027 Evaluating and Modeling of Beam Attenuation by a Carbon Fiber Treatment Couch for Management of Kilovoltage Imaging Doses during Image-guided Radiotherapy
Kurashiki Central Hospital Junya Miyata
- ★ TPI-028 Phosphatidylcholine, a Predictive Biomarker of Therapeutic Effect for Bone Metastasis from Castration-resistant Prostate Cancer
Hirosaki University Megumi Kikuchi

Radiotherapy: Deep Learning

16:20–17:00

Chairperson: Ryo Kakino
Taiki Magome

- ★ TPI-029 Auto-segmentation of Important Centers of Growth in the Pediatric Skeleton to Consider During Radiation Therapy Based on Deep Learning
Shandong Cancer Hospital and Institute Shandong First Medical University and Shandong Academy of Medical Sciences, China Wenlong Qiu
- ★ TPI-031 Feasibility study of deep learning-based markerless real-time tumor tracking for patients with lung cancer
Kyoto University Dejun Zhou
- ★ TPI-032 Development of Prediction Model for Head and Neck Volume Reduction by Clinical Factors and Radiomics in Head and Neck Cancer
Tohoku University Miyu Ishizawa

Image Informatics: Prediction

17:10–18:10

Chairperson: Taiki Magome
Noriyuki Kadoya

- ★ TPI-033 Prediction of Short-Term Prognosis of CCU Patients Using Visualizable CNN in ECG Images
Fujita Health University Terumasa Kondo

- ★ TPI-034 Combining Clinical Data with CT Image in Deep Learning for Outcome Prediction of Oropharyngeal Cancer Recurrence
Komazawa University Shogo Fukuda
- ★ TPI-035 Prediction of Time Variant Trajectory of Lung Tumor Growth during TKI Targeted Therapy
Kyushu University Rintaro Furuta
- ★ TPI-036 A Radiogenomic Signature for Prediction of Lung Cancer Prognosis: Association Between HOPX Gene Expression and CT Image Features
Kyushu University Yu Jin
- ★ TPI-037 Radiomic Classification of Severity Caused by Coronavirus Disease 2019 Pneumonia Based on CT Images
The University of Tokyo Hospital Takahiro Iwasaki
- ★ TPI-038 Automated Detection of Gastric Polyps from Endoscopic Images Using U-net
Fujita Health University Ayana Sugiura

April 16 (Sat.) 502

Quality Assurance

8:00–8:50 Chairperson: Hiroyuki Okamoto
Chie Kurokawa

- ★ TPI-040 The Control of Electron Beams Using Yoke and Cavity Iron Core Solenoids
Tokyo Metropolitan University Hayata Sakamoto
- ★ TPI-041 Development of Stoichiometric Calibration Method for MVCT to MD Table on Tomotherapy
Hiroshima University Shogo Tsunemine
- ★ TPI-042 Evaluation of a New Independent Dose Verification Software SciMoCa for Prostate and Head and Neck Cancer Plans with Helical TomoTherapy
Komazawa University Kaito Sakai
- ★ TPI-043 Development of Independent Dose Calculation System for a Second-check Dose Calculation for Spot Scanning Proton Therapy
Nagoya City University West Medical Center Toshiyuki Toshito

Radiotherapy: Planning

9:00–9:50 Chairperson: Hideki Takegawa
Toshiyuki Ogata

- ★ TPI-044 Effect of Slice Thickness on Estimating Lung Volume in Lung Resection Analysis by Phantoms
National Cancer Center Hospital East Amon Ohsawa
- ★ TPI-045 Radiobiological Evaluation Considering the Treatment Time with CyberKnife Stereotactic Radiosurgery for Brain Metastases
Niigata University Medical and Dental Hospital Hisashi Nakano
- ★ TPI-046 Lead Shield with ARM Optimization Effectively Suppress Mandible Dose in HDR Brachytherapy for Tongue Cancer
Osaka University Hiroya Shiomi
- ★ TPI-047 Validity of Two Robust Radiobiological Optimization Algorithms Based on the Mixed Beam Model for Intensity Modulated Carbon-Ion Therapy
Osaka University Masashi Yagi

- ★ TPI-048 Construction of Backup Solutions for Patients Who Treat with Elekta Unity Using Fallback Planning Module of RayStation
Chiba University Kota Abe

Radiation Measurement and Detector

10:00–10:50

**Chairperson: Hiraku Iramina
Yusuke Oribe**

- ★ TPI-049 Bone and Soft-tissue Image Generation Method Based on One Shot X-ray Exposure Using a Photon-counting Detector
Kanazawa University Cheonghae Lee
- ★ TPI-050 Phantom Study of CZT Photon-counting BMD Detector
Korea University, Korea Beomjun Park
- ★ TPI-051 Plastic Scintillation Dosimeter with a Conical Mirror for Measuring 4D Dose Distribution
Chiba University Masato Tsuneda
- ★ TPI-052 Evaluation of Detection Accuracy for Moving Objects with an Infrared Depth Camera
Fujita Health University Daisuke Yamanaka
- ★ TPI-053 Development of a Compact Non-invasive Detector for High Dose-rate ¹⁹²Ir Source Movement
Shimane University Hiroyuki Arakawa

Diagnostic Technology-2

13:10–14:00

**Chairperson: Takeshi Hara
Sho Ozaki**

- ★ TPI-054 Detection of Elevated Pulmonary Arterial Wedge Pressure Using Chest X-ray Image by Convolutional Neural Network
Teikyo University Takumasa Tsuji
- ★ TPI-055 Automated Extraction of Carotid Plaque by U-Net in Ultrasound Images
Fujita Health University Gakuto Hirano
- ★ TPI-056 A Predictive Model for Patient Functional Outcomes of Cerebral Infarction Using Weakly Supervised Learning with an Attention Mechanism on MR Images
Fujita Health University Yudai Higashi
- ★ TPI-057 Prediction of Answers in Fill-in-the-blank Questions Using BERT in Radiological Technology Field
Hokkaido University of Science Ayako Yagahara
- ★ TPI-058 Respiratory Phase Analysis of Dynamic Chest Radiographs for Facilitating Image-based Pulmonary Function Diagnosis
Kanazawa University Rentaro Tanimoto

Image Informatics: Virtual Imaging Trials (VIT)

14:10–15:10

**Chairperson: Ehsan Samei
Rie Tanaka**

- ★ TPI-059 Virtual Imaging Trial to Determine Detection Performance of Pulmonary Impairments with Dynamic Chest Radiography
Kanazawa University Shunya Yamaguchi

★ : English Presentation

- ★ TPI-060 Virtual Imaging Trial for Optimization of Imaging Conditions in Pediatric Dynamic Chest Radiography
Kanazawa University Rie Tanaka
- ★ TPI-061 Development of Deep Learning-based Mediastinum Suppression Technique for Dynamic Chest Radiography Using Virtual Patients
Kanazawa University Ryuichi Nagatani
- ★ TPI-062 Development of a Deep Learning-based Bone Suppression Technique for Dynamic Chest Radiography Using Virtual Patients
Kanazawa University Futa Goshima
- ★ TPI-063 Deep Learning-Based Lung Volume Estimation with Dynamic Chest Radiography: A Virtual Imaging Trial
Kanazawa University Nozomi Ishihara
- ★ TPI-064 Deep-Learning-Based Detection of Motion Blur Due to Body Motion: A Virtual Imaging Trial
Kanazawa University Shiho Nozaki

Biology: Dosimetry and Simulation

15:20–16:20

Chairperson: Satoshi Kito
Wei Shan Chang

- ★ TPI-065 The Effect of High Dose-rate Irradiation on cell Survival : Simple Investigation with the Cultured Cells
Fujita Health University Maki Kurimoto
- ★ TPI-066 Optimization of Irradiation Interval for Fractionated Stereotactic Radiotherapy by an In-silico Cell Model
Hiroshima University Daisuke Kawahara
- ★ TPI-067 Reduction of Sub-lethal Damage Repair Effect in Spot-scanning Proton Therapy: An Attempt to Use the Intensity Modulation
Hokkaido University Hikaru Hosoi
- ★ TPI-068 Treatment Planning on Carbon Ion Radiotherapy for Prostate Cancer Based on Cellular Experiments of PC3 Human Prostate Cancer Cell Line
Osaka Heavy Ion Therapy Center Yushi Wakisaka
- ★ TPI-069 Establishing the Commissioning System for Verifying the Clinical Dose of Intensity Modulated Ion Therapy
Osaka University Naoto Saruwatari
- ★ TPI-070 Prediction of Cell Survival Using Track-structure Monte Carlo Simulation
NIRS, QST Dousatsu Sakata

BNCT and Neutron Dosimetry

16:30–17:30

Chairperson: Takahiro Kato
Satoshi Nakamura

- ★ TPI-071 Study on the Improvement of Neutron Distribution by Overlapping of Irradiation Fields Using Intensity Moderators in Accelerator-Based BNCT
Kyoto University Akinori Sasaki
- ★ TPI-072 Design, Verification, and Application of a Filtration System to Improve the Dose Distribution of an Accelerator-based Neutron Capture Therapy System
Osaka Medical and Pharmaceutical University Naonori Hu

- ★ TPI-073 Commissioning of a Treatment Planning System Used for Clinical BNCT and Validation against an Independent Monte Carlo Dose Calculation System
Osaka Medical and Pharmaceutical University Naonori Hu
- ★ TPI-074 Verification of Complementary Approach Using Full-energy Monte Carlo Method and Partial Model-based Method for Fast Dose Calculation in BNCT
Kyoto University Mai Nojiri
- ★ TPI-075 Comprehensive Evaluation of Dosimetric Impact against Setup Errors in Accelerator-based BNCT with Different Treatment Parameter Settings
Osaka Medical and Pharmaceutical University Ryo Kakino
- ★ TPI-076 Evaluation of Dose Equivalent by Secondary Neutrons Generated by Head Proton Therapy
Nagoya University Yuta Kobayashi

April 17 (Sun.) 502

Nuclear Medicine-1

8:00–9:00 Chairperson: Seiichi Yamamoto
Tomoyuki Hasegawa

- ★ TPI-077 Fast Analytical PET Simulation toward in vivo Range Monitoring for Scanned Proton Beam
Osaka University Takamitsu Masuda
- ★ TPI-078 Concept and Clinical Impact of an Intraoperative Forceps-type Coincidence Detector for Intraoperative Lymph Node Diagnosis Using FDG
NIRS, QST Miwako Takahashi
- ★ TPI-079 CLS-PET: a High-resolution Portable Small-animal PET with a 20 cm Axial FOV
NIRS, QST Go Akamatsu
- ★ TPI-080 Development of a TOF Helmet-type PET Scatter Correction Method with Image-domain Interpolation and Subtraction
NIRS, QST Hideaki Tashima
- ★ TPI-081 Performance Comparison of offline PET Systems for Visualization of a Heavy-ion Microbeam
NIRS, QST Hideaki Tashima
- ★ TPI-082 Experimental Assessment of Completeness Condition for WGI Compton Image Reconstruction
NIRS, QST Hideaki Tashima

Nuclear Medicine-2

9:10–9:40 Chairperson: Yasuhiko Okura
Koichi Okuda

- ★ TPI-083 Noise Reduction in Dedicated Breast PET Images Using a Deep Denoising Filter Bank
East Nagoya Image Diagnosis Center Masahiro Tsukijima
- ★ TPI-084 Compensating Positron Range Effects of Ga-68 in Preclinical PET Imaging by Using Convolutional Neural Network: a Monte Carlo Simulation Study
Kaohsiung Medical University, Taiwan Ching-Ching Yang
- ★ TPI-085 Evaluation on the Usefulness of ROI Setting for Multi-gated Cardiac Blood Pool Scan Based on Deep Learning
Shingu University, Korea Yu-Jeong Lee

Nuclear Medicine-3

9:50–10:30

Chairperson: Kenta Miwa
Kouhei Hanaoka

- ★ TPI-086 Shielding Ability of Tungsten Apron during Lu-177 DOTATATE Therapy
Kanazawa University Hospital Hiroto Yoneyama
- ★ TPI-087 Evaluation of a Hybrid Small Animal PET/MRI Requiring a Device to Solve Image Fusion Problems
Iwate Medical University Toshiaki Sasaki
- ★ TPI-088 Is Bayesian Penalized Likelihood Reconstruction without Point-Spread-Function Correction Appropriate for Amyloid PET Imaging?
Kitasato University Kei Wagatsuma
- ★ TPI-089 FDG Healthy Volunteer Imaging with the World's First Helmet-type Brain PET
National Institutes for Quantum Science and Technology (QST) Go Akamatsu

Diagnostic Technology-3

10:40–11:20

Chairperson: Hiroko Yamashina
Shinichiro Hirose

- ★ TPI-090 Usability and Image Evaluation of Nasal Tangential Projection Using Glabellar Lines
Shinhan University, Korea Yeju Jeong
- ★ TPI-091 Optimization of Automatic In-house Software for Detecting the Joint Destruction in RA Patients Using Reliability Index
Hokkaido University Taichi Okino
- ★ TPI-092 Development of Medical Assistive Device Using 3D Printer for Chest AP Examination
Shinhan University, Korea Gyeong-won Baeg
- ★ TPI-093 Evaluation of Emphasis of Noise Suppression Processing Technology Using Structural Similarity Index
Kyushu University Nobukazu Tanaka

Radiation Protection

11:30–12:00

Chairperson: Kosuke Matsubara
Takashi Ohba

- ★ TPI-094 Improvement of Micro-densitometry Method Using a Sheet Which Has X-ray Shielding Ability
Kanazawa University Miku Ando
- ★ TPI-095 Verification of Dose Reduction Using Gonad Shielding in Hip Joint Radiography
Kyoto University Hospital Saki Nozoe
- ★ TPI-096 The Usefulness of a Shielding Gown Designed for General Photography of Infants and Toddlers
Choohae College of Health Sciences, Korea Sewon Yoon

Particle Therapy: Simulation and Experiment

14:00–15:00

**Chairperson: Akito Saito
Akihiko Matsumura**

- ★ TPI-097 Evaluation of Dose Distributions for the Layer-stacking Conformal Irradiation under Internal Anatomical Structural Changes
Gunma University Yuki Hasebe
- ★ TPI-098 Development of Beam Axis Correction Method with Position Feedback System
Yamagata University Hikaru Souda
- ★ TPI-099 Reduction of Detector Misalignment Errors in Ionoacoustic Range Detection by Using a Miniature Laser Interferometer Hydrophone
Hokkaido University Shota Sueyasu
- ★ TPI-100 A Study on Evaluation Method of Proton Pencil Beam Irradiation Position Accuracy Using Self-Activated Image Information
Osaka University Masaki Kato
- ★ TPI-101 Range Uncertainties for MRI-only Treatment Planning with Convolutional Neural Network in Particle Therapy
Yamagata University Takayuki Kanai
- ★ TPI-102 Establishment of Evaluation Method for Fragmentation Model in Heavy Ion Therapy Energy
Tokushima University Yoshihide Sato

Particle Therapy: Imaging and Measurement

15:10–16:10

**Chairperson: Keisuke Maehata
Hikaru Souda**

- ★ TPI-103 Prompt Gamma Imaging in BNCT Using a Compton Camera
Gunma University Heavy Ion Medical Center Makoto Sakai
- ★ TPI-104 Optical Imaging of Dose Distribution by $^{10}\text{B}(n, \alpha)^7\text{Li}$ Reaction Using Boron-added Liquid Scintillator for Boron Neutron Capture Therapy
Kyushu University Hideya Maeda
- ★ TPI-105 Development of Fast Neutron Detection Method Discriminating Gamma-ray Events with Single Ionization Chamber in BNCT Field
Kyoto University Nishiki Matsubayashi
- ★ TPI-106 Examination on Dose-rate Dependence of Water Luminescence for Irradiation of Therapeutic Carbon-ion at Lower Energy than Cerenkov-light Threshold
Kyushu University Yuki Nagatomo
- ★ TPI-107 Luminescence Imaging of Water Irradiated by Protons under FLASH Radiation Therapy Conditions
Nagoya University Katsunori Yogo
- ★ TPI-108 The Perturbation Factor of Plane-parallel Chamber to Scanning Proton Beams: A Monte Carlo Study
Fujita Health University Hironari Kumazaki