

【General Session】

April 12 (Thu.) 418

1. Radiation Therapy (photon/electron) 1 (Commissioning)

13:00–14:00

Moderator: Hirokazu Mizuno

- 0-001** Dosimetric accuracy of dose calculation algorithms for lung heterogeneity phantom
Kobe Univ. Naritoshi Mukumoto
- 0-002** Comparison of Beam Data Measurement Methods to Simplify Data Collection with representative Data
Seirei Hamamatsu General Hosp. Yumiko Adachi
- 0-003** Dosimetric impact of dose calculation algorithms in RapidArc plans for high-grade glioma
Niigata Univ. Hosp. Takeshi Takizawa
- 0-004** Dosimetric impact of interplay effects in single arc volumetric modulated arc therapy for pancreatic cancer
Kyoto Univ. Makoto Sasaki
- 0-005** Multi-institutional analysis of photon beam data for Elekta Linac
Ishinomaki Red Cross Hosp. Kosei Fujiwara
- 0-006** Determination of dosimetric leaf gap and MLC transmission using multi-dimensional detector array
Keio Univ. Kyohei Fukata

2. Radiation Therapy (photon/electron) 2 (Treatment planning 1)

14:05–14:55

Moderator: Satoru Sugimoto

- 0-007** Comprehensive approach of total body irradiation (TBI) using CT-based treatment planning for long Source-surface distance (SSD) method
NCCHE RSQAD Hidenobu Tachibana
- ★ **0-008** Evaluation of the optimization workflow with design of experiment (DoE) for the various configurations of field arrangement in VMAT planning
Hiroshima Univ. Hosp. Kentaro Miki
- ★ **0-009** COMPARISON OF THREE RADIOTHERAPY TECHNIQUES AND DOSIMETRIC STUDY FOR LEFT-SIDE BREAST CANCER WITH THE INVOLVEMENT OF SUPRACLAVICULAR NODES.
Bangladesh Atomic Energy Commission Md Rafiqul Islam
- 0-010** Automated analysis of radiotherapy treatment planning with convolutional neural network for determination of optimal prescribed dose for prostate IMRT patients
Tohoku Univ Tomohiro Kajikawa
- 0-011** A study of quality evaluation in treatment plan of intensity modulated radiation therapy using the gradient measurement tool
Hokkaido Univ. Atsushi Izuka

3. Radiation Therapy (photon/electron) 3 (Patient specific QA 1)

15:00–15:50

Moderator: Masahiko Kurooka

- 0-012** Development of deep learning neural network based prediction of patient-specific QA

result

- 0-013** A basic examination of MLC limit speed by log file analysis for MLC QA
SMC Seiji Tomori
Niigata Univ. Masato Fujisawa
- 0-014** Treatment outcome estimation based on reconstructed patient anatomy received treatment beam
Tohoku Univ. Yoshiyuki Katsuta
- 0-015** Impact of rectal gas on the EPID-based in-vivo dosimetry system for IMRT prostate cancer patient
Tohoku Univ. Takuya Matsumoto
- 0-016** Evaluation of 3D-printed patient specific head and neck phantom for IMRT QA using RADModeler
Tohoku Univ. Kota Abe

4. Radiation Therapy (photon/electron) 4 (Outcome prediction • Radiomics)

15:55–16:25

Moderator: Jun'ichi Kotoku

- ★ **0-017** Optimization of feature subset and parameters for support vector machine using genetic algorithm in outcome prediction for patients with glioma
Komazawa Univ. Takuya Mizutani
- 0-018** Prediction of cancer prognosis by the CT-based radiomic signature in lung cancer patients with SBRT
Tohoku Univ. Shinya Sato
- 0-019** Microdosimetric evaluation of photon-energy dependence on biological effectiveness
Hokkaido Univ. Yoshie Yachi

5. Radiation Therapy (photon/electron) 5 (IGRT)

16:30–17:20

Moderator: Nobutaka Mukumoto

- ★ **0-020** Direct measurement of MV-scatter on kV image acquired during concurrent MV beam irradiation
Kyoto Univ. Hiraku Iramina
- ★ **0-021** Investigation of Entrance Surface Dose Evaluation Method Using Farmer Type Ionization Chamber in kV Radiation for Image-guided Radiation Treatment
Gunma Prefectural College of Health Sciences Hayato Tsuno
- ★ **0-022** CBCT image quality improvement using a deep convolutional neural network
Gunma Univ. Satoshi Kida
- ★ **0-023** Field-of-view expansion of megavoltage CT based on iterative reconstruction algorithm using prior information
Komazawa Univ. Yuki Watanabe
- 0-024** Marker recognition algorithm based on image similarity using pixel value histogram in real-time tumor-tracking radiotherapy
Hokkaido Univ. Kazunori Matsuyama

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6. Radiation Therapy (particle) 1 (Treatment planning)

13:00–13:50

Moderator: Kensuke Hayashi

- 0-025** Interfractional movements of the prostate and seminal vesicles during CT image-guided proton therapy for prostate cancer and their impact on the proton range for lateral beam configurations
Fukui Prefectural Hospital Proton Therapy Center Yoshikazu Maeda
- 0-026** Prostate position deviation analysis using real-time-image gated spot-scanning proton therapy (RGPT) system for prostate cancer
Hokkaido Univ. Hiroshi Tamura
- ★ **0-027** A study on the influence of changing the motion recognition rate on the dose accuracy of spot-scanning proton therapy
Hokkaido Univ. Tetsuhiro Sodeta
- ★ **0-028** Development of the DVH prediction method considering dose distribution in proton therapy
Hokkaido Univ. Yu Hiyama
- 0-029** Usefulness of quantitative assessment tool of anatomical change using a virtual proton depth radiograph for adaptive proton therapy
The National Cancer Center Hidenobu Tachibana

7. Radiation Therapy (particle) 2 (LET · Stopping power)

14:00–14:50

Moderator: Taku Inaniwa

- ★ **0-030** Development of an analytical dose-averaged LET calculation method using a dual-LET-kernel model for spot-scanning proton therapy
Hokkaido Univ. Shusuke Hirayama
- ★ **0-031** An investigation of biological impact caused by using a collimator in pencil beam scanning proton therapy
Hokkaido Univ. Koki Ueno
- 0-032** A simple formulation for deriving stopping power ratio in the human body from dual-energy CT data
Niigata Univ. Masatoshi Saito
- ★ **0-033** Range calculation in water irradiated by a carbon ion with updated ICRU stopping power table in Geant4
Nagoya Univ. Yoshiyuki Hirano
- ★ **0-034** The Proton Computed Tomography with VIPMan Phantom: A simulation Study
Oncology Center, Military Hospital 175, Viet Nam Dang Quang Huy

8. Radiation Therapy (particle) 3 (Dosimetry)

15:00–15:40

Moderator: Akihiro Nohtomi

- 0-035** Performance of a commercial scintillator/CCD camera system for scanned proton beams
Sapporo Teishinkai Hosp. Kunihiko Tateoka
- ★ **0-036** Development of an online dose distribution visualization system (RDD visualization system)
WERC Kyo Kume
- 0-037** Estimation of produced light from prompt gamma photons on luminescence imaging of

water for proton therapy dosimetry

Nagoya Univ Takuya Yabe

- 0-038** Simulation of ionoacoustic wave generated by MHz intensity oscillation of proton beam
Univ. of Tsukuba Yosuke Miyauchi

9. Diagnostic Imaging 1 (Analysis · Evaluation)

15:50–16:30 Moderator: Hidemi Kamezawa

- 0-039** Evaluation of Image Conditions using MTF and FOM in X-rays CT with Iterative Reconstruction for Detection of Acute Cerebral Infarction
Kitasato Univ. Hidetake Hara
- 0-040** Image quality characteristics of two-dimensional CdTe X-ray image sensor and discrimination ability of material of human body equivalent phantoms
Osaka Univ. Masao Matsumoto
- 0-041** Automatic measurement of presampled MTF using SD method with square-wave chart
Ibaraki Prefectural Univ. Shinji Abe
- 0-042** Determination of slice sensitivity profile for iterative reconstruction CT using low-contrast phantom
Niigata Univ. Shingo Harashima

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10. Radiation Measurement 1

9:00–9:50

Moderator: Yusuke Koba

- 0-047** Quantification of the coincidence between light and X-ray fields in air by using a light probe detector
Gifu Univ. Tomohiro Shimozato
- 0-048** Uncertainty estimation of an external monitor dosimeter for cross-calibration of high-energy electron beams
Nagoya Univ. Sadahiro Seno
- 0-049** Absorbed dose measurement of water in a high-energy electron beam by using a compact calorimeter
The Univ. of Komazawa Ken Hirayama
- 0-050** A study to speed-up the dose measurements with an alanine/ESR dosimeter
AIST Hidetoshi Yamaguchi
- 0-051** Characteristics of semiconductor detectors in a high-energy photon beam
Komazawa Univ. Takuya Saitou

11. Radiation Measurement 2

10:00–10:50

Moderator: Kiyomitsu Shinsho

- ★ **0-052** Dosimetric properties of a nanoDot OSLD system in radiotherapy
Kumamoto Univ. Kento Hoshida
- 0-053** Study of in vivo dosimetry using polymer gel dosimeter
IPU Hiraku Fuse
- 0-054** Development of a condenser dosimeter using a skin-insulated USB-A-substrate with a silicon X-ray diode
Iwate Medical Univ. Satoshi Yamaguchi
- ★ **0-055** Monte Carlo study of conversion factors for mean glandular dose in mammography

- ★ **0-056** Absorbed dose-to-water calibration of a dose area product meter in interventional radiology
Kumamoto Univ. Sae Shinohara

Kumamoto Univ. Suzuna Umeno

12. Medical Image and Information 1 (General)

11:00–11:50 Moderator: Atsushi Myojoyama

- 0-057** Iterative reconstruction algorithm with refraction correction
Teikyo Univ. Yuki Saitoh
- 0-058** Development of an inexpensive portable optical CT scanner
Teikyo Univ. Yoosuk Kang
- 0-059** Investigation of an 850-nm-peak high-sensitivity near-infrared-ray computed tomography scanner
Iwate Medical Univ. Yuichi Sato
- 0-060** Time-dependent weighted reconstruction method with insufficient projection data for mobile target
Hokkaido Univ. Sinnji Motoi
- 0-061** A Computer-Assisted Learning Program for Iterative CT Image Reconstruction
Tokyo Metropolitan Univ. Hiroyuki Shinohara

13. Radiation Therapy (photon/electron) 6 (Patient specific QA 2)

15:10–16:00 Moderator: Shuichi Ozawa

- ★ **0-065** Fundamental study on dosimetric error due to phantom setup error for film-based dose distribution analysis
Hokkaido Univ. Masayori Ishikawa
- 0-063** A feasibility study of the sum signal dosimetry for high dose quality assurance with Gafchromic films
NCCHE Ryuzo Uehara
- 0-064** An analysis of a systematic error of point dose measurements in IMRT verification
Ryukyus Univ. Masashi Kinjyo
- ★ **0-062** Performance evaluation of predictive gamma-passing rate of IMRT planar dose distribution
Hospital of UOEH Eiji Shiba
- 0-066** Impact of CT-HU values in the voxels around the reference point to dose difference in independent calculation verification
Komazawa Univ. Jun Nomura

14. Radiation Therapy (photon/electron) 7 (Treatment planning 2)

16:05–17:05 Moderator: Noriyuki Kadoya

- ★ **0-071** Evaluation for knowledge based planning of volumetric modulated arc therapy (VMAT) for prostate cancer in multi-institution
OICI Yoshihiro Ueda
- ★ **0-068** Application of knowledge-based VMAT treatment planning for prostate cancer to clinical delivery
Kindai Univ. Mikoto Tamura
- ★ **0-069** Angular range optimizer for VMAT using geometry-oriented dose uncertainty model

- Hiroshima Univ. Masayoshi Mori
- 0-070** Accuracy of Automated Knowledge-based Anatomical Segmentation for the Extracranial Regions
- KCH Taro Matsushita
- 0-067** Improvement of dose distribution by adjusting beam parameters based on dose calculations during a course of radiotherapy using optimization algorithm
- Tohoku Univ. Suguru Dobashi
- 0-072** Dosimetric evaluation of prostate SBRT dose distributions of Linac, CyberKnife and MRIdian
- NCCH Shie Nishioka

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15. Radiation Therapy (particle) 4 (Commissioning)
15:10–15:50 Moderator: Yoshikazu Tsunashima

- 0-073** Evaluation of interplay effect in the line scanning method for moving targets with small respiratory motion
- Aizawa Hosp. Yuya Sugama
- ★ **0-074** Performance of line scanning method for proton therapy
- Sapporo Teishinkai Hosp. Yuya Azuma
- 0-075** Clinical commissioning of the new carbon ion therapy system Osaka HIMAK
- Osaka HIMAK Masaaki Takashina
- ★ **0-076** The effects of hydrogen density to the neutron attenuation in BNCT treatment planning system
- Tottori Univ. Hosp. Hiroyuki Sato

16. Diagnostic Imaging 2 (Development)
16:00–16:40 Moderator: Masayori Ishikawa

- 0-043** Hands-on virtual reality dose visualization and air dose estimation in interventional radiology
- Teikyo Univ. Takeshi Takata
- 0-044** Dual-energy X-ray computed tomography scanner using a high-spatial-resolution cadmium telluride array detector
- Iwate Medical Univ. Eiichi Sato
- 0-045** Measurement of X-ray spectra using an LYSO-micro-photomultiplier detector and its application to dual-energy computed tomography
- Iwate Medical Univ. Yasuyuki Oda
- 0-046** Development of an extremely compact dosimeter using a silicon X-ray diode and a long USB cable
- Iwate Medical Univ. Michiaki Sagae

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17. Radiation Therapy (photon/electron) 8 (Motion management)

9:00–9:50

Moderator: Takeshi Kamomae

- 0-077** Evaluation of correlation between body-surface motion and tumor motion during breath-holding radiotherapy for lung cancer
Univ. of Yamanashi Masahide Saito
- ★ **0-078** Development of a quick calibration method of an infrared camera system for respiratory monitoring
Hiroshima Univ. Hospital Akito Saito
- ★ **0-079** Verification of target movement using a new 4-dimensional target-moving phantom
Tokai Univ. Yoshitsugu Matsumoto
- ★ **0-080** An investigation of geometric uncertainties of the rectum surfaces due to the shape variations in prostate cancer radiation therapy
Kyushu Univ. Mohammad Haekal
- ★ **0-081** Comparison of delivered dose distribution with intra-fractional motion in VAMT and HT using biplanar diode array detector
Juntendo Univ. Keisuke Usui

18. Radiation Therapy (photon/electron) 9 (Development • Others)

11:00–11:50

Moderator: Iori Sumida

- 0-082** Development of the equipment to control electron beams by using electromagnets
Tokyo Metropolitan Univ. Ryo Imai
- ★ **0-083** Realization of non-coplanar VMAT with continuous couch rotation on L-shaped treatment machines
Kyoto Univ. Hideaki Hirashima
- ★ **0-084** Development of raster scan IMRT using robotic radiosurgery system
Miyakojima Clinic Hiroya Shiomi
- ★ **0-085** Development of Monte Carlo dose calculation system for a new dual layer multi-leaf collimator
JRCWMC Yoshitomo Ishihara
- 0-086** Evaluation of correlation between internal fiducial marker motion and deformation field in lung
Hokkaido Univ. Naoki Matsumoto

19. Brachytherapy

13:00–13:30

Moderator: Hiroyuki Okamoto

- 0-087** Development of real-time quality assurance system for HDR brachytherapy
Hokkaido Univ. Shota Saito
- ★ **0-088** Output characteristics of Cerenkov emission for a quality assurance tool in HDR brachytherapy
HIPRAC Katsunori Yogo
- ★ **0-089** Effect of a brachytherapy applicator and tissue heterogeneity on dose distributions using Monte Carlo simulations for cervical cancer
Kyushu Univ. Tran Thi Thao Nguyen

April 14 (Sat.) 419**20. Radiation Measurement 3 9:00–10:00 Moderator: Hiroaki Kumada**

- 0-090** Visualization of Ra-223 chloride using a gamma-ray omnidirectional Compton camera for radioactive environmental monitoring
Kitasato Univ. Hiroshi Muraishi
- 0-091** Remote measurement of the radioactivity in urine passed by PET scan patients using a Compton camera
Tokyo Metropolitan Univ. Takara Watanabe
- 0-092** Evaluation of Cherenkov light influence on the fiber optic dosimeter using a Nd:YAG crystal
Hitachi, Ltd Yuichiro Ueno
- ★ **0-093** Development of prompt gamma rays imaging detector using LaBr₃(Ce) scintillator arrays for Boron Neutron Capture Therapy
Kyoto Univ. Keita Okazaki
- ★ **0-094** Development of real time radiation detector capable of beam quality discrimination measurement in BNCT field
Kyoto Univ. Michitaka Sato
- ★ **0-095** Neutron beam quality measurement of the Kyoto University Research Reactor using microdosimetric technique
Kyoto Univ. Naonori Ko

April 15 (Sun.) 418**21. Medical Image and Information 2 (Radiomics) 9:00–9:50 Moderator: Akihiro Haga**

- ★ **0-096** Preliminary results of radiomics feature stability with various CT acquisition parameters
Komazawa Univ. Taiki Magome
- 0-097** Image Classification using persistent homology(1)
Teikyo Univ. Jun'ichi Kotoku
- 0-098** Image Classification using persistent homology(2)
Teikyo Univ. Asuka Oyama
- ★ **0-099** Discovering the optimal mother wavelet in extraction of CT image-based radiomic features for survival prediction of lung cancer patients
Japan Society for the Promotion of Science Mazen Soufi
- ★ **0-100** Development of a framework for prediction of lung cancer patients' prognoses using PCA-based radiomic features
Kyushu Univ. Masahiro Yamada

22. Medical Image and Information 3 (Deep learning · Others) 10:00–10:40 Moderator: Shinichiro Mori

- ★ **0-101** Survival prediction of head and neck cancer patients based on image features selected by using artificial neural network
Teikyo Univ. Hidemi Kamezawa
- ★ **0-102** Deep-learning-based segmentation of GTV regions of lung cancer using datasets of

planning CT and PET/CT images

Kyushu Univ. Risa Nakano

- ★ **0-103** Preliminary study on the automatic detection of gastric cancer by computer-aided diagnosis Automatic detection of gastric cancer region using FCN-AlexNet

Fujita Health Univ. Kazuma Enomoto

- ★ **0-104** Combination of optical flow and principal components analysis for tumor motion analysis during X-ray radiotherapy

The University of Tokyo Michel Pohl

23. Radiation Therapy (photon/electron) 10 (MRI-guided radiotherapy)

13:00–14:00

Moderator: Satoshi Kito

- 0-105** Development of motion phantom in MRI-guided radiotherapy

NCCH Hiroyuki Okamoto

- ★ **0-106** Dose distributions in radiotherapy of lung tumor under MRI magnetic fields

Kumamoto Univ. Takahiro Kubota

- ★ **0-107** Dose distributions for magnetic field effect in a lung phantom using Geant4

Kumamoto Univ. Masayuki Yano

- 0-108** New designed end-to-end phantom compatible with conventional linac and MRI-guided radiotherapy system

NCCH Kotaro Iijima

- 0-109** Evaluation of DIR accuracy between MR images in prostate cancer patients for MR-guided radiotherapy

Tohoku Univ. Shohei Matsuda

- ★ **0-110** The effect of static magnetic field on the chamber response in water

Kumamoto Univ Takanori Matsuoka

24. Radiation Therapy (photon/electron) 11 (Dosimetry)

14:05–14:55

Moderator: Koji Sasaki

- 0-111** Phantom correction factor and dose conversion factor of radiophotoluminescent glass dosimeter in therapeutic electron beam for postal dose audit system

Tokyo Metropolitan Univ. Satsuki Wakamori

- 0-112** Investigation of conversion factor absorbed dose to water reference dosimetry using spherical water equivalent solid phantom

Iwate prefectural Isawa Hosp. Koji Ishita

- 0-113** Optical imaging of water during X-ray beam irradiations from linear accelerator

Nagoya Univ. Seiichi Yamamoto

- 0-114** Comparison between MC simulation and histogram of photons output from ¹³⁷Cs

Tokyo Metropolitan Univ. Kyohei Morita

- 0-115** Fundamental study on inhomogeneous sensitivity correction of scanning position in film dose calibration using Red-Green channel ratio

Sapporo Higashi Tokushukai Hosp. Hideki Kojima

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25. Nuclear Medicine

9:20–10:00

Moderator: Seiichi Yamamoto

- ★ **0-116** Intrinsic performance evaluation of a new TOF-PET detector module with 256-ch 3-mm-

pitch MPPC array

- QST/NIRS Go Akamatsu
 ★ **0-117** Development of an imaging simulation framework enabling modelling of PET scanners with arbitrary detector arrangement
- QST/NIRS Hideaki Tashima
 ★ **0-118** List mode reconstruction of a multi-pinhole triple head SPECT system
 Hosei Univ Yohei Fujishiro
- ★ **0-119** Three-dimensional Y90 imaging with a commercial Compton camera
 Gunma Univ. Makoto Sakai

26. Magnetic Resonance**13:00–14:00****Moderator: Taiki Magome**

- 0-120** A Study of Compressed Sensing MRI Using 2D Radial Sampling
 Tokyo Metropolitan Univ. Hiroyuki Shinohara
- 0-121** Differentiation of hepatocellular carcinoma and benign liver nodules by using texture analysis on non-enhanced T2-weighted MR images
 Teikyo Univ. Yusuke Saikawa
- 0-122** Enhancement of MRI signal changes due to paramagnetic substance in cell-mimetic viscous solution
 Teine Keijinkai Hosp. Ken Masuyama
- 0-123** Improvement of Measurements of Cerebral Arteriolar Vasomotor Function Using MRI
 Hokkaido Univ. Yusuke Nitanda
- 0-124** Simulation analysis of electric field strength induced in a conductive loop during MRI examinations
 Hokkaido, Univ. Takuya Haruyama
- 0-125** A new semi-automatic ROI setting to delineate head and neck squamous cell carcinoma
 Hokkaido Univ. Kanae Moriyama