

【General Session】

April 16 (Thu.) 418

Machine Learning & Mathematical Modeling 1

11:00–11:50

Chairperson: Daisuke Kawahara
Yoshiro Ieko

- POP-001. Development of an RPA system using a single-board microcontroller
Medipolis Proton Therapy Center Yasumasa Kakinohana
- POP-002. Visualization of nonlinearity in image reconstruction using nonlocal means filter as regularization
Tokyo Metropolitan University Hiroyuki Shinohara
- POP-003. Development of deep learning-based dose conversion model using generative adversarial network in proton beam therapy
Southern Tohoku Proton Therapy Ryohei Kato
- POP-004. Preliminary study on optimization of training weights for deep learning-based auto-contouring of OARs in cervical and endometrial cancer brachytherapy planning
Tohoku University Akari Niiyama
- POP-005. The necessity of conventional geometric image transformation compared to deep learning models
University of Tsukuba Nao Yoneda

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QA/QC

11:00–11:50

Chairperson: Hideyuki Takei
Yoshinori Tanabe

- POP-006. Evaluation of a CT-ED conversion table QA method using an anthropomorphic phantom with the dual-energy subtraction technique
National Hospital Organization Nagasaki Medical Center Shotaro Ito
- POP-007. Quantitative analysis of linear accelerator failures using a text-extraction application from service reports
Osaka International Cancer Institute Yoshihiro Ueda
- POP-008. Expanding the application sites of methods using calculated MU values in carbon-ion radiotherapy: Validation in pancreatic cancer treatment
Ion Beam Therapy Center, SAGA HIMAT Foundation Kentarou Tamura
- POP-009. Verification of ultra-high-resolution whole-body dose distribution in helical VMAT-TBI and systematic framework toward clinical implementation
The University of Tokyo Hospital Takeshi Ohta
- POP-010. Feasibility study of novel scintillation plate dosimeter for stereotactic body radiotherapy quality assurance
Tokyo Metropolitan University Honoka Sugaya

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Executive Committee Program 1 [Student Best Presentation Award – JSMP Student Grand Prix –]

13:00–14:30

**Chairperson: Yoshikazu Maeda
Keisuke Yasui**

- POP-011. Selection of the optimal physics model for Monte Carlo simulation of secondary neutron in proton beam therapy
Nagoya University Kazuki Toida
- POP-012. Dynamic prognostic modeling of HCC after proton beam therapy using a GRU-ODE-Bayes Time-Series radiomics framework
Hiroshima University Misato Kishi
- POP-013. Investigation of leakage current without irradiation in reference-class ionization chambers
Hiroshima University Ryoko Akeno
- POP-014. Development of an empirical RBE calculation model in various cell types toward realization of high-precision carbon-ion radiotherapy
International University of Health and Welfare Ryosuke Akimoto
- POP-015. Development of machine learning driven patient specific QA system for carbon ion radiotherapy
Yamagata University Ayaka Yamada
- POP-016. A study on a method for evaluating wide-area dose distribution in carbon ion radiotherapy using Monte Carlo simulation
Tokyo Metropolitan University Yuta Hirai
- POP-017. Scanned particle-beam tracking with multi-step temporal prediction-based beam correction
Hokkaido University Fumika Nakamura
- POP-018. End-to-end AI-driven IMRT planning for prostate cancer: from auto-segmentation to deliverable plans without TPS optimization
Hiroshima University Yudai Uno
- POP-019. A reconstruction method for reducing multiple coulomb scattering artifacts in heavy-ion CT imaging
The University of Osaka Hinatsu Chihara

Executive Committee Program 2 [Congress President's Award – MedP Grand Prix –]

14:40–15:40

**Chairperson: Toshiyuki Toshito
Hidenobu Tachibana**

- POP-020. Toward vibe coding in radiation therapy: A benchmark of local LLM code generation capabilities
The University of Osaka Hiroya Shiomi
- POP-021. End-to-end test of online MR-guided adaptive radiotherapy using multimodal and deformable anthropomorphic male pelvic phantom
Tokyo Metropolitan University Masato Nishitani
- POP-022. End-to-end audit of skin-markless surface-guided radiation therapy: multi-institutional validation results
University of Yamanashi Masahide Saito
- POP-023. Evaluation of silicon detectors for linear energy transfer measurements of therapeutic helium, carbon, oxygen, and neon ion beams
QST Taku Inaniwa
- POP-024. Compartment model incorporating chemotherapy effects to predict lymphocyte depletion in NSCLC radiotherapy
Hitachi, Ltd. Koichi Miyazaki

POP-025. Robustness evaluation and enhancement in LETd optimized multi-ion therapy

QST Takamitsu Masuda

Machine Learning & Mathematical Modeling 2

15:50–16:50

Chairperson: Takahiro Nakamoto

Keiichiro Matsushita

POP-026. Prediction of local failure after stereotactic body radiotherapy for bone metastases using radiomics and dosiomics

Komazawa University Sato Takahashi

POP-027. CT radiomics-based prediction of cognitive function following whole brain radiation therapy

Niigata University Mitsuki Kitazawa

POP-028. Evaluating the capability of large language models in radiotherapy through professional certification examinations in Japan

Tohoku University Hikaru Tanno

POP-029. Development of an automatic GTV segmentation model for early-stage lung cancer using fractal structure-based transfer learning

Tohoku University Ryota Tozuka

POP-030. A study on absorption models and computational efficiency in the Near-Infrared Monte Carlo photon transport

Hokkaido University Kakeru Izumi

POP-031. Improving the accuracy of real-time markerless lung tumor segmentation using target style domain adaptation

University of Tsukuba Hospital Fumiaki Komatsu

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Radiation Dosimetry and Measurement

15:50–16:50

Chairperson: Takashi Hanada

Makoto Sakama

POP-032. Development of dynamic tumor tracking accuracy verification system for a gimbaled linac system

Narita Memorial Hospital Masaya Ichihara

POP-033. A development of absorbed dose standard for proton beams using a graphite calorimeter

National Metrology Institute of Japan Yuka Urago

POP-034. Monte Carlo calculation of perturbation correction factors in proton beams using the latest small volume ionization chamber

Fujita Health University Momoka Miwa

POP-035. Development of a high-sensitivity omnidirectional rotating Compton camera with an extended energy range for environmental monitoring : Geant4 simulation

Kitasato University Kosuke Okubo

POP-036. Evaluation of the average variation of output factors at SSD of 90cm and depth of 10cm as the reference data

Varian Medical Systems Katsutomo Tsujii

POP-037. Characterization of pulse repetition frequency using a high-temporal-resolution plastic scintillation detector

Aichi Cancer Center Hospital Tomoki Kitagawa

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Machine Learning & Mathematical Modeling 3

9:00–9:50

Chairperson: Takehiro Shiinoki
Yujiro Nakajima

- POP-038. Model initialization with pretrained-weight injection for medical image segmentation
University of Tsukuba Harumitsu Takano
- POP-039. Automated optimization of prostate VMAT treatment planning using the model-based reinforcement learning framework dreamerV3
Kyorin University Syunsuke Tomonaga
- POP-040. Deciphering the mechanistic basis of FLASH effect variability via in-silico modeling of oxygen, fibrosis, and cytokine interactions
Hiroshima University Daisuke Kawahara
- POP-041. Mid-Treatment GTV auto-segmentation informed by pre-treatment MRI for head-and-neck adaptive radiotherapy
Hiroshima University Masaki Nagao
- POP-042. Multimodal ensemble survival modeling for glioblastoma: An innovative framework integrating sequence-specific radiomic risks
Hiroshima University Yuzuha Kadooka

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Radiation Therapy (Particle Therapy) 1

9:00–10:10

Chairperson: Sodai Tanaka
Makoto Sakai

- POP-043. Commissioning of SOI microdosimeter for the evaluation of dose-averaged linear energy transfer of carbon, oxygen and neon ion beams
QST Hospital Taku Nakaji
- POP-044. Application of dynamic multi-leaf collimator in intensity-modulated proton therapy for head and neck cancer: dosimetric evaluation and experimental verification
Osaka Proton Therapy Clinic Yushi Wakisaka
- POP-045. Feasibility study of uninterrupted continuous delivery in real-time gated proton therapy
Shonan Kamakura General Hospital Masashi Yamanaka
- POP-046. Patient-specific 4D dynamic dose analysis for reasonable gating levels in respiratory-gated scanning proton therapy for lung cancer
Osaka Proton Therapy Clinic Mayu Nakata
- POP-047. Scintillation imaging for measuring LET distribution of proton beams
Nagoya University Yutong Ge
- POP-048. Prediction of field factors based on residual range in broad-beam proton therapy
Medipolis Proton Therapy and Research Center Taiki Isomura
- POP-049. Determination of the optimal energy pair for stopping power ratio estimation in particle therapy using dual-energy CT
Ion Beam Therapy Center, SAGA HIMAT Foundation Naoki Hayashi

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Radiation Biology

10:00–10:50

**Chairperson: Yutaka Takahashi
Yoshitaka Matsumoto**

POP-050. Assessment of patient-specific radiosensitivity using head and neck tumor-derived organoids : correlation analysis with genetic information

Fujita Health University

Hiyori Hara

POP-051. Comparison of gene expression after irradiation between radioresistant and highly radiosensitive cell lines using RNA-seq

Nagoya University

Yoshiyuki Hirano

POP-052. Simulation study on indirect actions in carbon-ion and electron irradiation toward molecular-level understanding of radiation effects

Nagoya University

Yoshiyuki Hirano

POP-053. Assessment of bismuth nanoparticles as radiation sensitizers in a clonogenic assay using HeLa cells

Nagoya University

Himari Takahashi

POP-054. Research on the biological effects of therapeutic-dose proton irradiation in live fish

The University of Osaka

Kentaro Hakamada

April 18 (Sat.) 419

Radiation Therapy (Photon, Electron, Brachytherapy, and Nuclear Medicine) 1

10:00–11:10

**Chairperson: Shuichi Ozawa
Mikoto Tamura**

POP-055. Evaluation of an averaged dose calculation model for clinical feasibility and performance in volumetric modulated arc therapy treatment planning

Chiba Cancer Center

Ryohei Miyasaka

POP-056. Evaluation of deformable image registration for thoracic CT images using the default parameters of elastix

International University of Health and Welfare

Komei Funayama

POP-057. Evaluation of a biaxially rotational radiotherapy technique in stage III lung cancer

Aichi Cancer Center Hospital

Ryoma Tomoda

POP-058. Development of 3D collision detection software for external radiotherapy using LiDAR scanning

Kitasato University Hospital

Kentaro Takahashi

POP-059. Evaluation of image-based predictors for optimal replanning timing in head and neck IMRT

Kobe University Hospital

Naritoshi Mukumoto

POP-060. Development of high-precision geometric calibration technology for medical linear accelerators

Izumi City General Hospital

Shigeo Anai

POP-061. Examination of energy dependence of two types of TG51-addendum reference class dosimeters

Aomori Rosai Hospital

Koji Ishita

Radiation Therapy (Photon, Electron, Brachytherapy, and Nuclear Medicine) 2

15:50–17:00

**Chairperson: Satoshi Kito
Masahide Saito**

POP-062. Estimation of effective dose from fluoroscopy in ¹²⁵I seed brachytherapy

Tokyo Medical University Ibaraki Medical Center

Masato Takanashi

- POP-063. A trade-off analysis between plan complexity and dosimetric quality in VMAT planning
Niigata University Kanta Horie
- POP-064. Lattice-shield array imaging for source localization in high-dose-rate brachytherapy
Kyushu University Hiroyuki Arakawa
- POP-065. Difference in 4DCT-based lung ventilation images using normal and deep inspiration depths
Niigata University Miho Matsuo
- POP-066. Dosimetric characteristics of hybrid intracavitary/interstitial brachytherapy using the Geneva applicator for gynecologic cases
Tohoku University Yoshiyuki Takahashi
- POP-067. A proposed complexity metric for brachytherapy source motion
Juntendo University Daito Sakurai
- POP-068. Development of extended virtual phantom set for enhancing adaptability in zero-prep MR-linac workflow
Tohoku University Koki Nakajo

April 19 (Sun.) 418

Diagnostic Imaging

10:40–11:30

Chairperson: Shingo Ohira
Hidetake Hara

- POP-069. Feasibility study of a medical visualization platform via simultaneous acquisition and spatiotemporal integration of CT and photogrammetric 3D models
Sapporo Kojinkai Memorial Hospital Daisuke Tanii
- POP-070. Simultaneous dual-energy imaging using photon-counting X-ray computed tomography with Fourier analysis
Iwate Medical University Hospital Yuichi Sato
- POP-071. Study on a novel imaging method using high-spatial-resolution dual-energy X-ray computed tomography
Iwate Medical University Eiichi Sato
- POP-072. Quasi-monochromatic embossed X-ray computed tomography using pixel-shifted subtraction
Iwate Medical University Eiichi Sato
- POP-073. PHITS-based simulation of a silicon-scintillator stacked detector for next-generation spectral CT
Kyorin University Ryota Toino

April 19 (Sun.) 419

Radiation Therapy (Particle Therapy) 2

10:40–11:50

Chairperson: Yuya Miyasaka
Yuya Azuma

- POP-074. Deep learning-based dose prediction in proton beam therapy for hepatocellular carcinoma: Comparison of loss functions
Southern Tohoku Proton Therapy Center Shuta Ogawa
- POP-075. Evaluation of uniform irradiation field formation in synchrotron-based ultrahigh-dose rate proton therapy
Nagoya City University West Medical Center Hideto Kino
- POP-076. Initial simulation study on proton beam imaging with flat panel detector and mosaic-pattern range modulation filter
Hokkaido University Ryoya Sakai

POP-077. Determination of fabricating threshold for a mesh ripple filter in heavy-ion therapy

Juntendo University

Shu Fujita

POP-078. The effect of phantom differences on Monte Carlo simulation for neutron dose equivalent in proton therapy

Nagoya University

Ginga Nakahara

POP-079. Effect of titanium cranial hardware on dose distribution in a proton scanning beam at various angles

Tokyo Metropolitan University

Haruhito Watanabe

POP-080. MR imaging for MR image guided proton therapy under actual proton therapy environment

Sumitomo Heavy Industries, Ltd., Technology Research Center

Nagaaki Kamiguchi