2nd Symposium on new trends in nuclear and medical physics

Marian Smoluchowski Institute of Physics, Jagiellonian University, Kraków, Poland
September 24th - 26th 2025

Wednesday 24/09

8:00 - 9:00	***Registration, Coffee***
9:00 - 9:15	*Opening*
	Positronium research
9:15 - 9:40	**Kenji Shimazoe:** *Direct three gamma positronium imaging and cascade gamma chemical imaging*
9:40 - 10:05	**Koji Michishio:** *Development of a high-quality, energy-tunable positronium beam via photodetachment of positronium negative ions*
10:05 - 10:20	**Ewa Dryzek:** *Application of Positron Annihilation Lifetime Spectroscopy in Polymer Composites*
10:20 - 10:45	**Paweł Moskal:** *Prospects for Positronium and Quantum Entanglement Imaging with J-PET*
10:45 - 10:55	**Manish Das:** *First experimental demonstration of positronium lifetime imaging with the novel radionuclide ^{52}Mn using J-PET scanner*
10:55 - 11:30	***Coffee break***
	Detector Technologies
11:30 - 11:55	**Paolo Finocchiaro:** *Miniature Scintillating Detectors and SiPMs: a brief Summary and a few Applications*
11:55 - 12:20	**Tuba Conka Yildiz:** *Cd(Zn)Te in Medical Imaging: Academic Innovation and Market Transformation*
12:20 - 12:35	**Saliha Bashir:** *Radiation Damage Monitoring in the Upgraded VELO Detector at LHCb*
12:35 - 12:50	**Priyanka Priyanka:** *Simulated Signal Database for Improved Resolution in Position Sensitive Planar Germanium Detector*
12:50 - 13:05	**Flaminia Quattrini:** *Development of high-Z organic scintillators for modern SPECT imaging and theranostic dosimetry*

13:05 - 14:15	***Lunch break***
	Nuclear/Particle studies
14:15 - 14:40	**Yoshiki Tanaka:** *Search for eta'-mesic nuclei with (p,dp) reaction at GSI/FAIR*
14:40 - 15:05	**Simone Manti:** *High Precision X-ray Spectroscopy: from Kaonic Atoms to Societal Applications*
15:05 - 15:20	**Alessio Porcelli:** *µPPET, a J-PET application for cosmic rays investigation*
15:20 - 15:35	**Francesco Giacosa:** *Decay Law of Selected Fluorescent Substances*
15:35 - 16:05	***Coffee break***
	Radiotherapy monitoring
16:05 - 16:30	**Tomasz Matulewicz:** *Proton-induced nuclear reactions in the hadrontherapy energy range*
16:30 - 16:55	**Aafke Kraan:** *Fragmentation measurements for particle therapy with the FOOT experiment*
16:55 - 17:10	**Kamila Kalecińska:** *Plan-Guided Super-Resolution of Dose Distribution*
17:10 - 17:25	***Coffee break***
17:25 - 17:40	**Magdalena Kołodziej**: *Silicon as beam-activated tumour tracer for online proton therapy monitoring – experimental study*
17:40 - 17:55	**Martina Moglioni:** *In-beam PET monitoring during radioactive ion beams irradiation for real-time dose discrepacies and anatomical change detection*
17:55 - 18:10	**Daria Boscolo:** *Treatment and online PET imaging of a mouse tumor with radioactive ion beams*

Thursday 25/09

	EV/preclinical imaging
9:00 - 9:25	**Edvin van der Pol:** *Extracellular vesicle flow cytometry: what's possible and what's next?*
9:25 - 9:50	**Ewa Stępień:** *EVs as a non-invasive approach to diagnose and monitor metabolic diseases*
9:50 - 10:05	**Magdalena Skalska:** *Lipid Remodelling in Extracellular Vesicles from β-Cells under Hyperglycemic Stress - Multimodal Mass Spectrometry Approach*
10:05 - 10:20	**Raffael Ferragut:** *Development of a millifluidic platform for slow positron beam studies of biological samples*
10:20 - 10:35	**Anna Gromotowicz-Popławska:** *Perspectives on Preclinical Molecular Imaging Research at the Radiopharmacy Centre, Medical University of Bialystok*
10:35 - 11:05	***Conference Photo* & *Coffee break***
	Radiopharmaceuticals
11:05 - 11:30	**Agnieszka Majkowska-Pilip:** *Nanobrachytherapy of Triple-Negative Breast Cancer and Glioblastoma Multiforme Using Auger Emitters*
11:30 - 11:55	**Biswajit Das:** *Preclinical Ac-225 Imaging for Targeted Alpha Therapy: Accelerating Cancer Therapeutics*
11:55 - 12:10	**Jarosław Choiński:** *30th anniversary of the Heavy Ion Laboratory of the University of Warsaw and its contribution to the production of medical radioisotopes*
12:10 - 12:25	**Daniel Guendel:** *Impact of the Midkine expression on the uptake of [18F]FDG and [18F]FET in chicken chorioallantoic membrane glioblastoma models*
12:25 - 12:40	**Monika Łyczko:** *The ^{103}Pd and ^{109}Pd Bisphosphonate Complexes for Auger Electron Therapy of Bone Metastatic Tumor Cells*
12:40 - 13:45	***Lunch break***
13:45 - 15:00	***Poster session* & *Coffee***
15:00 - 18:00	**(HPDA) Training**
19:30	**Conference dinner in Galicyjska Restaurant**

Friday 26/09

	PET
9:00 - 9:25	**Qiyu Peng:** *Development of Advanced PET Technology for Scientific and Clinical Applications*
9:25 - 9:50	**Reimund Bayerlein:** *Modern Data Correction Approaches in Positron Emission Tomography*
9:50 - 10:05	**Macoto Fujimoto:** *Direct imaging of the three-photon annihilation process beyond PET*
10:05 - 10:20	**Martin Readler:** *Optimizing the event selection of the total-body J-PET scanner with a brain PET insert: a simulation study*
10:20 – 10:50	***Coffee break***
	Positronium research
10:50 – 11:15	**Tomasz Sowiński:** *Theoretical untangling of photon entanglement detection in positronium annihilation processes*
11:15 - 11:40	**Sebastiano Mariazzi:** *Preliminary tests of positronium gathering in microcavities connected to nanochannels*
11:40 - 12:05	**Milena Piotrowska:** *Para-positronium and beyond: probing two-photon annihilation in bound states*
12:05 - 12:20	**Magdelena Allen:** *Constraining CP Violation in Ortho-Positronium Decays at 7 Tesla with NeuroSphere PET Modules*
12:20 – 12:30	**Neha Chug:** *New precision limits on CPT symmetry test in positronium with J-PET*
12:30 – 12:40	**Deepak Kumar:** *Measuring the degree of entanglement in matter using a plastic-scintillator based PET scanner*
12:40 - 13:50	***Lunch break***
	Radiotherapy monitoring
13:50 – 14:15	**Marta Opalińska:** *Personalization of radioligand therapy through dosimetry: Clinical opportunities and challenges*
14:15 - 14:40	**Bram Carlier:** *In vivo radiation sensing using phase-change ultrasound contrast agents*

14:40 - 15:05	**Narendra Rathod:** *High-Resolution Intravital Imaging: Novel On-Chip PET and iQID Camera for Personalized Radiopharmaceutical Therapy and Microdosimetry*
15:05 - 15:20	**Szymon Niedzwiecki:** *Range Monitoring in Proton Therapy Using the J-PET Scanner: First Experimental Insights*
15:20 - 15:50	***Coffee break***
	Nuclear/particle studies
15:50 – 16:15	**Rudrajyoti Palit:** *Probing nuclear structure using lifetime measurements*
16:15 – 16:40	**Luca Povolo:** *Cold Neutron Interferometry for Fundamental Physics Experiments*
16:40 – 17:05	**Udai Singh:** *Scientific Computing: Remote Access, CNN Segmentation, and SARS-CoV-2 Dynamics*
17:05 -17:25	**Closing**

Posters

1	Koki Nakamura	Enhancement of Biological PET Imaging via Quantum Entanglement using GAGG-SiPM pixel ring detectors
2	Karol Szymczyk	A Geant 4 simulation of the positronium target cloud in the GBAR experiment
3	Maciej Słotwiński	Extracellular Vesicles and How to Find Them
4	Justyna Mędrala-Sowa	Mirror matter: towards precise measurement of ortho-positronium lifetime
5	Monika Kercz	Can decay gammas from radioactive ion beams enhance prompt gamma imaging?
6	Simbarashe Moyo	Quantification of Nanoscale Free Volumes in Human Plasma Clots Using Positron Annihilation Lifetime Spectroscopy
7	Michalina Kazimierczak	Normalisation Strategies in ToF-SIMS Analysis of Liver Tissue - Critical Impact on Comparative Molecular Profiling in a Diabetic Rat Model
8	Magdalena Kołodziej	MERMAID – prototype PET scanner for small aquatic animals
9	Kamila Kasperska	Studies of the absorption parameter 3γ/2γ in positronium decays
10	Jakub Hajduga	Automated Simulation Workflow for 3D-Printed Scintillator Phantoms in Radiotherapy Planning
11	Łukasz Kapłon	Optical properties and time-of-flight resolution of plastic scintillators for total-body J-PET scanner
12	Karol Kubat	Ex-Vivo Positronium Lifetime Imaging with 44Sc Using J-PET Scanner
13	Tevfik Kaplanoglu	Design and construction of Cross-Staged Gantry System of Total-Body J-PET/CT Scanner for Motion Artifact Free anatomic and metabolic imaging
14	Ermias Beyene	Developing efficiency maps for double isotope studies with J-PET
15	Pooja Tanty	Towards Charge conjugation symmetry test in Electromagnetic Interaction using J-PET
16	Kavya Valsan Eliyan	Developing analysis criteria for studies of CP symmetry with photons from o-Ps decay and Compton scattering with the Modular J-PET Detector
17	Satyam Tiwari	A Feasibility Study of Using Detector-Scattered Photons for Attenuation Map Generation in J-PET Scanner
18	Kriti Awasthi	Cryo-TEM and Python-Driven 3D Reconstruction of Breast Cancer-Derived Extracellular Vesicles for Radiopharmaceutical Characterization
19	Kriti Awasthi	Fluorescence-Guided Analysis of EV Behavior in 3D Breast Cancer Spheroids: Toward PET-Compatible Theranostics
20	Aleksander Khreptak	Titanium–Scandium Radionuclide Generator: A New Approach for Sustainable Isotope Production

21	Keyvan Tayefi Ardebili	SiPM Performance Characterization for Total-Body J-PET: Hamamatsu vs. Onsemi
22	Piyush Pandey	Feasibility study of Antihydrogen vertex imaging using the modular J-PET
23	Juan Fransisco Gonzalez	Characterization of new SiC detectors for further experiments with exotic nuclei at barrier energies
24	Philippe Clement	Graph-based event reconstruction for segmented detectors: SiFi-CM case study
25	Aafke Kraan	Usage of DL-based portal dose images for treatment error detection with transit dosimetry in radiotherapy
26	Anand Pandey	Towards the development of an iterative algorithm for positronium lifetime imaging using 44Sc with the modular J-PET
27	Wiktor Mryka	Towards feasibility study of Positronium yield in proton beam therapy
28	Neha Gupta	Characterization of optical photon transport in Long Plastic Scintillators
29	Wiktor Zantowicz	Time-Based Separation of Scattering and Capture Processes in NAA Based on Monte Carlo Simulations in Geant4 toolkit
30	Mateusz Kaczmarek	First Laboratory Tests of the SABAT Project Sensor with a D-T Neutron Generator