

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

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

Thursday 25/09

	EV/preclinical imaging
9:00 - 9:25	Edvin van der Pol: <i>Extracellular vesicle flow cytometry: what's possible and what's next?</i>
9:25 - 9:50	Ewa Stępień: <i>EVs as a non-invasive approach to diagnose and monitor metabolic diseases</i>
9:50 - 10:05	Magdalena Skalska: <i>Lipid Remodelling in Extracellular Vesicles from β-Cells under Hyperglycemic Stress - Multimodal Mass Spectrometry Approach</i>
10:05 - 10:20	Raffael Ferragut: <i>Development of a millifluidic platform for slow positron beam studies of biological samples</i>
10:20 - 10:35	Anna Gromotowicz-Popławska: <i>Perspectives on Preclinical Molecular Imaging Research at the Radiopharmacy Centre, Medical University of Białystok</i>
10:35 - 11:05	Conference Photo & Coffee break
	Radiopharmaceuticals
11:05 - 11:30	Agnieszka Majkowska-Pilip: <i>Nanobrachytherapy of Triple-Negative Breast Cancer and Glioblastoma Multiforme Using Auger Emitters</i>
11:30 - 11:55	Biswajit Das: <i>Preclinical Ac-225 Imaging for Targeted Alpha Therapy: Accelerating Cancer Therapeutics</i>
11:55 - 12:10	Jarosław Choiński: <i>30th anniversary of the Heavy Ion Laboratory of the University of Warsaw and its contribution to the production of medical radioisotopes</i>
12:10 - 12:25	Daniel Guendel: <i>Impact of the Midkine expression on the uptake of [18F]FDG and [18F]FET in chicken chorioallantoic membrane glioblastoma models</i>
12:25 - 12:40	Monika Łyczko: <i>The ^{103}Pd and ^{109}Pd Bisphosphonate Complexes for Auger Electron Therapy of Bone Metastatic Tumor Cells</i>
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: <i>Development of Advanced PET Technology for Scientific and Clinical Applications</i>
9:25 - 9:50	Reimund Bayerlein: <i>Modern Data Correction Approaches in Positron Emission Tomography</i>
9:50 - 10:05	Macoto Fujimoto: <i>Direct imaging of the three-photon annihilation process beyond PET</i>
10:05 - 10:20	Martin Readler: <i>Optimizing the event selection of the total-body J-PET scanner with a brain PET insert: a simulation study</i>
10:20 – 10:50	Coffee break
	Positronium research
10:50 – 11:15	Tomasz Sowiński: <i>Theoretical untangling of photon entanglement detection in positronium annihilation processes</i>
11:15 - 11:40	Sebastiano Mariazzi: <i>Preliminary tests of positronium gathering in microcavities connected to nanochannels</i>
11:40 - 12:05	Milena Piotrowska: <i>Para-positronium and beyond: probing two-photon annihilation in bound states</i>
12:05 - 12:20	Magdalena Allen: <i>Constraining CP Violation in Ortho-Positronium Decays at 7 Tesla with NeuroSphere PET Modules</i>
12:20 – 12:30	Neha Chug: <i>New precision limits on CPT symmetry test in positronium with J-PET</i>
12:30 – 12:40	Deepak Kumar: <i>Measuring the degree of entanglement in matter using a plastic-scintillator based PET scanner</i>
12:40 - 13:50	Lunch break
	Radiotherapy monitoring
13:50 – 14:15	Marta Opalińska: <i>Personalization of radioligand therapy through dosimetry: Clinical opportunities and challenges</i>
14:15 - 14:40	Bram Carlier: <i>In vivo radiation sensing using phase-change ultrasound contrast agents</i>

14:40 - 15:05	Narendra Rathod: <i>High-Resolution Intravital Imaging: Novel On-Chip PET and iQID Camera for Personalized Radiopharmaceutical Therapy and Microdosimetry</i>
15:05 - 15:20	Szymon Niedzwiecki: <i>Range Monitoring in Proton Therapy Using the J-PET Scanner: First Experimental Insights</i>
15:20 - 15:50	<i>Coffee break</i>
	Nuclear/particle studies
15:50 – 16:15	Rudrajyoti Palit: <i>Probing nuclear structure using lifetime measurements</i>
16:15 – 16:40	Luca Povoło: <i>Cold Neutron Interferometry for Fundamental Physics Experiments</i>
16:40 – 17:05	Udai Singh: <i>Scientific Computing: Remote Access, CNN Segmentation, and SARS-CoV-2 Dynamics</i>
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 $3\gamma/2\gamma$ 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 ^{44}Sc 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 ^{44}Sc with the modular J-PET
27	Wiktor Mryka	Towards feasibility study of Positronium yield in proton beam therapy
28	Sushil Sharma	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