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 ^{52}Mn*
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:** *High-Z Semiconductor Detectors for Medical Applications*
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: investigating the Muon Puzzle*
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	**Szymon Niedzwiecki:** *Range Monitoring in Proton Therapy Using the J-PET Scanner: First Experimental Insights*
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 103Pd and 109Pd 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:** *Simulation studies of a brain PET insert for the total body J-PET tomograph*
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:** *Testing CPT symmetry in positronium decays with J-PET*
12:30 – 12:40	**Deepak Kumar:** *Measuring the degree of entanglement in matter using a plastic-scintillator 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	**Kamila Kalecińska:** *Plan-Guided Super-Resolution of Dose Distribution*
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	Manish Das	First experimental demonstration of Positronium Lifetime Imaging with 52Mn
13	Karol Kubat	Temperature dependance of positron lifetime in liquid water using PALS system.
14	Tevfik Kaplanoglu	Construction of moving gantries for total-body J-PET/CT scanner
15	Ermias Beyene	Developing two gamma and two gamma with prompt conditioned efficiency maps for double isotope studies
16	Pooja Tanty	Towards the precise measurement of oPs to 4gamma decay with J-PET
17	Kavya Valsan Eliyan	Precision Tests of Leptonic CP Symmetry with the J-PET Detector
18	Satyam Tiwari	Detector-Scattered Photons as an Inherent Data Source for

		Attenuation Map Generation in CT-less PET
19	Kriti Awasthi	Cryo-TEM and Python-Driven 3D Reconstruction of Breast Cancer-Derived Extracellular Vesicles for Radiopharmaceutical Characterization
20	Kriti Awasthi	Fluorescence-Guided Analysis of EV Behavior in 3D Breast Cancer Spheroids: Toward PET-Compatible Theranostics
21	Aleksander Khreptak	Titanium–Scandium Radionuclide Generator: A New Approach for Sustainable Isotope Production
22	Karol Kubat	Ex-vivo Positronium Lifetime Imaging with 44Sc
23	Keyvan Tayefi	SiPM Performance Characterization for Total-Body J-PET: Hamamatsu vs. Onsemi
24	Piyush Pandey	Determination of annihilation vertex of antihydrogen using modular J-PET detector
25	Juan Fransisco Gonzalez	Characterization of new SiC detectors for further experiments with exotic nuclei at barrier energies