



COST Action CA24131

European Network for Radiation-Detection-based Research
and Innovation addressing increasing societal Challenges -
ENRICH

1 st Call for applications for hosting STSMs

Host Organization (Name, website)	Jagiellonian University, Department of Experimental Particle Physics and Applications, J-PET group, https://koza.if.uj.edu.pl/
Location/Country	Kraków, Poland
Short description of the activities that could be done during the period of stay	<p>The J-PET Project is an innovative research initiative focused on developing a novel type of Positron Emission Tomography scanner based on plastic scintillators. This multidisciplinary system serves dual purposes in medical imaging and fundamental physics research, including investigations of discrete symmetry violations in positronium decay processes. Beyond conventional PET imaging capabilities, the J-PET group developed positronium imaging technique. The recent achievement of capturing the first in-vivo positronium image in human brain tissue using J-PET technology demonstrates the promising future of this novel diagnostic approach.</p> <p>The Total-Body PET system based on the J-PET concept is currently under construction, aiming to significantly increase sensitivity and enable efficient whole-body imaging.</p> <p>During the stay in the J-PET group, the participant of the Short-Term Scientific Mission (STSM) may take part in ongoing research related to J-PET technology. The activities can include assisting in data analysis and simulations, contributing to detector development and testing, and participating in experimental measurements. The participant would also have the opportunity to learn about the research conducted with the J-PET</p>

	<p>detection system, take part in data taking, and analyze experimental data.</p> <p>Additionally, the stay may involve attending group meetings, seminars, and workshops, collaborating with researchers and students, and gaining hands-on experience with experimental setups and software used in PET research.</p>
<p>Available Resources (Laboratories, experimental set-ups, beamlines, spectrometers, software, etc....)</p>	<p>J-PET detection system, detector/electronic testing laboratories, J-PET dedicated MC software and analysis framework</p>
<p>Specific instrumental details (γ-, X-ray Detectors, X-ray sources, data acquisition systems, etc.)</p>	<p>Beta+ sources (photons from direct annihilations and positronium decays), FPGA , triggerless DAQ</p>
<p>Relevance with ENRICH WGs</p>	<p>The J-PET Project aligns closely with ENRICH WGs, especially WG2: <i>Technological Advancement</i>, WG5: <i>Multidisciplinary and Societal Applications</i>, and WG7: <i>Integration and Interchange</i>.</p> <p>WG 2: J-PET introduces innovative detector technology, including the upcoming Total-Body PET, advancing detector design, timing resolution, and large-scale data acquisition. This directly contributes to the development of cutting-edge imaging technologies promoted by this WG.</p> <p>WG 5: J-PET bridges fundamental physics and medical diagnostics through novel Positron Emission Tomography and Positronium Imaging approaches. These methods can improve tumor detection and characterization, demonstrating clear societal impact.</p> <p>WG 7: The project encourages collaboration across physics, engineering, data science, and medicine. It supports sharing experimental techniques, data analysis methods, and clinical integration strategies with other research communities.</p>
<p>Length of the STSM</p>	<p>From few days to two weeks</p>
<p>Contact person (name, surname, email)</p>	<p>Paweł Moskal, p.moskal@uj.edu.pl, ufmoskal@googlemail.com</p>