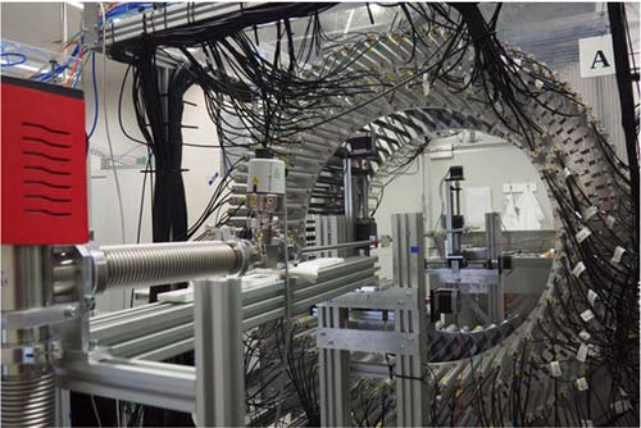


Scientific supervisor	
Name	Dr. Szymon Niedźwiecki, Dr. Magdalena Skurzok
E-mail	szymon.niedzwiecki@uj.edu.pl , magdalena.skurzok@uj.edu.pl
Department	Experimental Particle Physics and Applications
Laboratory	J-PET
Group webpage	http://koza.if.uj.edu.pl/
Proposed research topic	
<i>Phantom studies with the use of pharmaceuticals in a J-PET detector</i>	
Short description (< 1000 characters)	
<p>The aim of the research is the measurement and preliminary analysis of the image measured with the unique J-PET detector (Fig. 1) with the use of medical phantoms using pharmaceuticals. The image of the pharmaceutical will be based on the determination of the places of photon emission inside the detector. As part of the analysis, it will be necessary to determine the precision of the reconstruction of the emission point.</p> <p>During the internship, the student will have the opportunity to acquire knowledge about the conducted research (theoretical basis, statistics), get acquainted with the world's unique J-PET detection system (Fig. 1) (learning how to use the device, taking measurements), in which the pharmaceutical will be placed in several several medical phantoms. The collected data will then be analyzed for image reconstruction.</p>	
	
<p>Fig. 1 J-PET detector used to perform measurements, with a small annihilation chamber inside.</p>	
<p>The level of research will be adapted to the degree of study. Each step of the experimental work and data analysis will be explained on an ongoing basis and according to individual needs.</p>	
Main research tool	
J-PET detector, oscilloscope, C++/python, ROOT library	
Additional requirements to the candidate	
Students of physics, experimental physics and particle physics. Nice to have: willingness to learn, research enthusiasm, diligence and punctuality.	
Possibility to continue student internship in the form of:	
Diploma thesis (master's or bachelor's degree)	X
PhD study	X