

<b>Scientific supervisor</b>	
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Department	Department of Experimental Particle Physics and Applications
Laboratory	2nd Physics Laboratory, Heavy ions laboratory (B-0-19)
Group webpage	<a href="http://koza.if.uj.edu.pl/sabat/">http://koza.if.uj.edu.pl/sabat/</a>
<b>Proposed research topic</b>	
<i>Characterization of scintillation detector with anti-Compton shield for use in detection of hazardous materials</i>	
<b>Short description (&lt; 1000 characters)</b>	
<p>The internship includes testing of a scintillation detector designed to record gamma quanta and neutrons for use in an underwater hazardous materials detector being constructed under the SABAT project. These detectors are constructed from a LaBr<sub>3</sub>:Ce,Sr scintillation crystal and an anti-Compton shield made of BGO, connected to an array of silicon photomultipliers. Within the framework of the proposed work, basic characterizations of the detector will be carried out (e.g., determination of energy resolution and temporal resolving power) it is also planned to develop an algorithm for reconstructing the gamma quantum response site in the detector (based on the amplitude distribution of signals recorded with individual photomultipliers) and algorithms for background rejection resulting from the Compton effect.</p>	
<b>Main research tool</b>	
<ol style="list-style-type: none"> <li>1. Scintillation detectors ( BGO, LSO and LaBr<sub>3</sub>:Ce:Sr crystals)</li> <li>2. AmBe neutron source</li> </ol>	
<b>Additional requirements to the candidate</b>	
<ol style="list-style-type: none"> <li>1. Basic skills in programming in any language (preferred: C++ or Python)</li> <li>2. Basic skills in data analysis (SMOP-1)</li> <li>3. Knowledge on the basic processes of gamma quanta interaction with matter</li> </ol>	
<b>Possibility to continue student internship in the form of:</b>	
Diploma thesis (master's or bachelor's degree)	X
PhD study	X