

<b>Scientific supervisor</b>	
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Department	Department of Experimental Particle Physics and Applications
Laboratory	2nd Physics Laboratory
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>Modeling of neutron transport in the human body for the Boron Neutron Capture Therapy (BNCT)</i>	
<b>Short description (&lt; 1000 characters)</b>	
<p>Practices include modeling of a neutron beam forming for the development of BNCT therapies for a deuter-deuterium neutron generator. In addition, the obtained energy distribution of neutrons and gamma quanta will be used to model the therapeutic neutron beam interaction with the patient's tissues (mainly the head). The purpose of this part of the practice is to determine the dose distribution in the body and the intensity of the secondary gamma quanta that can be used to monitor the distribution of boron during therapy. This will allow for a preliminary determination whether it is possible to use the imaging technology developed in the J-PET group for this purpose.</p>	
<b>Main research tool</b>	
1. PC with MCNP lub GEANT4 packages installed	
<b>Additional requirements to the candidate</b>	
<ol style="list-style-type: none"> <li>1. Basic skills in programing 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