

<b>Scientific supervisor</b>	
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Group webpage	www.zf.if.uj.edu.pl
<b>Proposed research topic</b>	
<i>Construction of a phantom for magnetic measurements of brain</i>	
<b>Short description (&lt; 1000 characters)</b>	
<p><i>Most of the life processes in living organisms is associated with the generation of weak magnetic fields. In this regard, biomagnetic measurements may provide medically relevant information about the organism. Besides diagnostic information, it can be also a source of information about brain and its operation (thought processes).</i></p> <p><i>The aim of the internship is to create a brain phantom that allows simulating biomagnetic fields. During the first part of the internship, a model of the brain will be prepared and 3D printed. Next, magnetic coils will be installed on the phantom. This will be used for generation of field similar to that associated with brain operation. To do so, a simple software (Python or LabView) to control a multichannel current source will be coded. The project will culminate in the measurement of the field generated by the phantom using an optical magnetometer.</i></p>	
<b>Main research tool</b>	
During the internship one will use: 3d printer, CAD software, multichannel current source, and optical magnetometer.	
<b>Additional requirements to the candidate</b>	
<ul style="list-style-type: none"> <li>- basic knowledge in electro-magnetism,</li> <li>- basics of 3D design,</li> <li>- knowledge of Python or LabView.</li> </ul>	
<b>Possibility to continue student internship in the form of:</b>	
Diploma thesis (master's or bachelor's degree)	<b>X</b>
PhD study	<b>X</b>