

Scientific supervisor	
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Department	Department of Hadron Physics
Laboratory	B-0-19, SiFi-CC
Group webpage	https://bragg.if.uj.edu.pl/sificc
Proposed research topic <i>Tests of a Compton camera for proton therapy</i>	
Short description (< 1000 characters)	
<p><i>The SiFi-CC project aims to build a new type of Compton camera, i.e. a two-module, position-sensitive gamma ray detector. Its target application is the recording of prompt-gamma radiation emitted during the irradiation of a patient in proton therapy, which will allow for real-time monitoring of the therapy and capturing possible deviations from the treatment plan. Such devices, not yet used in clinical practice, will allow proton therapy to be brought to an even higher level of precision and safety for patients.</i></p> <p><i>The SiFi-CC camera is a detector currently under construction consisting of thin scintillation fibers read out by silicon photomultipliers using modern readout electronics. The trainee will work with an existing full-scale prototype of the first module. Examples of tasks that can be carried out as part of the internship are:</i></p> <ul style="list-style-type: none"> • <i>study of the optical cross-talk effect,</i> • <i>experimental optimization of system operating conditions,</i> • <i>design and construction of a cooling system for SiFi-CC.</i> <p><i>The student will have the opportunity to get acquainted with the characteristics of work in the nuclear physics/particle detector laboratory and with modern technologies in this field.</i></p>	
<p>Main research tool: <i>scintillation detector, silicon photomultipliers, oscilloscope, computer</i></p>	
<p>Additional requirements to the candidate <i>interest in experimental work, knowledge of the basics of nuclear physics; knowledge of the basics of C++ and/or python is an additional advantage</i></p>	
Possibility to continue student internship in the form of:	
Diploma thesis (master's or bachelor's degree)	x
PhD study	x

