



Contribution ID: 573

Type: **Poster**

Characterization and functional test of a micro dosimeter of scintillated optical fibers

Tuesday 7 September 2021 12:05 (1 minute)

With the growing demand for better and improved technics in treating cancer in Portugal, there is an ongoing discussion of the need to build a proton therapy centre as well as train skilled labour in this field. In result, there is a need for high precision measuring instruments that supply real-time measures of dose (J/kg) at a tissue or DNA level, where the variance values are large enough to create undesirable errors.

The goal of this work is to develop a new detector capable of measuring real-time doses with sub-millimeter resolution, constructed using juxtaposed thin plastic scintillating fibers (PSF, 0.25, 0.5 and 1 mm) coupled with a readout by a multi-anode photomultiplier (MAPMT, 64 channels) and a suitable data acquisition (DAQ) system. In this poster it is discussed the characterization of the full detection chain (optical fibers, MAPMT and DAQ), measuring quantities such as optical and electrical crosstalk, noise, linearity, and stabilization using UV LEDs. To conclude the characterization, several radioactive sources (Cs-137, Co-60, Tl-204 and Am-241) were used.

Primary authors: SANTOS, Matild (LIP - Lab. Instrumentação e Física Experimental de Partículas e FCUL - Faculdade de Ciências da Universidade de Lisboa, Portugal); GUERREIRO, Duarte (LIP - Lab. Instrumentação e Física Experimental de Partículas e FCUL - Faculdade de Ciências da Universidade de Lisboa, Portugal); Dr SAM-PAIO, Jorge (LIP - Lab. Instrumentação e Física Experimental de Partículas e FCUL - Faculdade de Ciências da Universidade de Lisboa); Prof. PERALTA, Luís (LIP - Lab. Instrumentação e Física Experimental de Partículas e FCUL - Faculdade de Ciências da Universidade de Lisboa, Portugal); Prof. EVANS, Guiomar (LIP - Lab. Instrumentação e Física Experimental de Partículas e FCUL - Faculdade de Ciências da Universidade de Lisboa, Portugal); Dr GENTIL, João (LIP - Lab. Instrumentação e Física Experimental de Partículas)

Presenter: SANTOS, Matild (LIP - Lab. Instrumentação e Física Experimental de Partículas e FCUL - Faculdade de Ciências da Universidade de Lisboa, Portugal)

Session Classification: Poster Session I

Track Classification: Applications of nuclear and particle physics technology