

Analysis of SiPM characteristics

lundi 2 décembre 2013 17:25 (25 minutes)

Surgery is one of the most important procedures in the treatment of cancers. In this context, the precise location of the tumor before and during surgery is a very important step to ensure the success of the operation. To determine tumor location, nuclear medical imaging techniques based on radiopharmaceutical products and radiation detection intra-operative probes are used. The intra-operative probes are generally based on a miniaturized detection system whose main parameters are spatial and energy resolution. Compactness, biocompatibility and cost are also important parameters.

The Silicon Photomultiplier (SiPM) is now the most promising photon detector candidate for a new generation of intraoperative probes. It has well adapted characteristics such as lightness, compactness, low operating voltage, etc... making it ideal for miniaturized medical imaging applications. However, some physical phenomena related to these devices such as temperature dependence, noise or avalanche multiplication are not yet sufficiently understood.

In this talk, the measurement of different SiPM devices as a function of temperature will be presented. An automatic procedure for the analysis of SiPM characteristics (e.g. breakdown voltage, gain, noise etc...) has been developed and it will be shown in details.

Auteurs principaux: Dr PARA, Adam (Fermi National Accelerator Laboratory); M. NAGAI, Andrii (Laboratoire de l'accélérateur linéaire); Dr DINU, Nicoleta (Laboratoire de l'accélérateur linéaire)

Orateur: M. NAGAI, Andrii (Laboratoire de l'accélérateur linéaire)

Classification de Session: Physique Nucléaire et Applications