



Contribution ID: 786

Type: Oral (Non-Student) / orale (non-étudiant)

Photodetection with SiPM in particle physics and materials science

Tuesday 16 June 2015 16:30 (15 minutes)

Pixelated Geiger-mode avalanche photo-diodes also called silicon photo-multipliers (SiPMs) are replacing traditional vacuum photo-multiplier tubes (PMTs) in numerous applications in subatomic physics, medical imaging and condensed matter. They have several advantages being insensitive to magnetic field, having higher efficiency, more uniform gain, and being more compact. However, they still cannot compete with PMTs for application requiring large areas of photo-detection at room temperature. We will describe their characteristics and performances and show a few specific applications in particle physics, condensed matter and medical imaging.

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Session Classification: T3-8 Advanced Instrumentation at Major Science Facilities: Detectors I (DIMP) / Instrumentation avancée dans des installations scientifiques majeures: détecteurs I (DPIM)

Track Classification: Instrumentation and Measurement Physics / Physique des instruments et mesures (DIMP-DPIM)