

Overview of SiPM readout electronics

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Solid-state photomultipliers (SiPM/MPPC) are increasingly popular and replacing vacuum-based devices in many applications. Although their signal properties (gain, capacitance...) are similar and can thus be readout with the same electronics, several dedicated ASICs have been developed worldwide to take benefit of the high level integration that can be reached with these devices. Furthermore, charge and timing measurements can reach unprecedented accuracy and enable new applications in various domains of physics or medical imaging.

The talk will review the basic front-end architectures that can be used to take full benefit from the device (voltage/current/charge sensitive preamplifiers, current conveyors...) to optimize their performance. It will also compare the various readout architectures that are being used for readout (discrete, ASICs, waveform digitizers, "digital SiPM" ...).

Finally, it will review the status and performance of the various ASICs developed worldwide (SPIROC, BASIC, NINO, PETA, KLAUS, SPIDER, EASIROC, RAPSODI...)

Primary author: DE LA TAILLE, christophe (CNRS LAL Orsay)

Presenter: DE LA TAILLE, christophe (CNRS LAL Orsay)