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The First measurements on SiPMs with Bulk Integrated Quench Resistors

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High ohmic poly-silicon which is used as quench resistor in conventional Silicon photomultipliers (SiPMs) turns out to be an obstacle for light and is one of the most cost and yield driving technological issues. SiPM is becoming very good candidate for the replacement of conventional photomultiplier tubes and thus the development of these devices is very striking. We have proposed a new detector concept which has the quench resistor integrated into the silicon bulk avoiding polysilicon resistors. Extensive simulation results showed the feasibility of the concept. The quenching mechanism has been demonstrated in a proof of principle production performed in house. The first prototypes have been fabricated (second production run) and allowed testing of the device performance. The results from the first characterization measurements will be presented. Based on these results the inherent advantages and drawbacks compared to standard SiPMs will be discussed.

Summary (Additional text describing your work. Can be pasted here or give an URL to a PDF document):

http://aldebaran.hll.mpg.de/twiki/bin/viewfile/Avalanche/Publications?rev=1;filename=Ninkovic_summary_VCI2010.pdf

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