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Miniaturized multi-channels SiPM read-out electronics for medical imaging application

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This work presents a miniaturized photo-detection system based on a new semiconductor photon-detector namely SiPM and a special read-out electronics build around a dedicated ASIC.
The used SiPM arrays have important advantages compared to classical photomultipliers tubes (compactness, good sensitivity, low bias voltage) and the ASIC's read-out electronics developed at LAL offers multi-channels processing in a very small area.
The whole system is aimed to be inserted in an intra-operative probe for image guided surgery of tumors. This on-going work is developed in collaboration between LAL, IMNC and Lariboisière Hospital and is named SIPMED project (SIlicon Photomultiplier for MEDical applications).

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