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Silicon photomultipliers and their bio-medical applications

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Abstract

Single Photon Avalanche Diodes (SPADs) have been used for photon counting since the 1960s, but only in the recent decade multi-pixel structures based on SPAD—arrays and silicon photomultipliers have been developed. These devices are finding more and more applications in many fields, where detection of light at the level of a single photon is needed. Due to their exclusive properties (fast response, low operating voltage, single photon sensitivity at room temperature, extremely high gain, stability, compactness, robustness and low price), such sensors are successfully replacing traditional vacuum photomultipliers in many devices. The paper briefly describes the state of the art and suggests some new applications in biology and medicine.
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