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# Photon detection innovation: the VSiPMT

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The Vacuum Silicon PhotoMultiplier Tube (VSiPMT) idea was born in Naples with the intent of substituting PMTs dynode chain, which bring many problems due to the gain concept adopted. Looking at the history of photodetectors, one can notice that there are different attempts to overcome the ”dynode problem”. Over the years, SiPMs and HPDs went closer to the solution of the problem. Neverthless, the former are limited to small-medium detection surfaces, while the latter need a too high operation voltage.
With the VSiPMT we want to offer a new solution that allows to overcome the covering problems of SiPMs and at the same time can work with a reasonable voltage supply (˜ 2 kV).
The VSiPMT is obtained by substituting the dynode chain of a standard PMT with a special SiPM, called SiEM (Silicon Electron Multiplier). This design allows to export the SiPM detection features over the photocathode area.
We here present the results of the latest prototype manufactured by Hamamatsu Photonics.

## Funding information

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