

Development of SiPMs for ultra low background LAr and LXe detectors

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“Thanks to their high light yields liquid argon and liquid xenon (LAr, and LXe) are adopted as targets and/or shield in present and future double beta decay and dark matter experiments.

To readout the scintillation light emitted by particles releasing energy in the liquid noble gases, high quantum efficiency, cryogenics photomultipliers (PMTs) are usually adopted.

In the last couple of years we put a big effort to outline and develop the main specifications for ultra high radio-pure, cryogenic large area SiPM. The measured photoelectron yield of the tested SiPM array devices significantly exceed that of state of the art PMTs, while their mass, operational voltage, and related issues are much more favorable.

In this poster the design and achieved features and measured performances of large area SiPMs operated in LAr will be outlined as well as the radiopurity level achieved in the mounting and packaging of the SiPMs arrays. Their possible applications will be also outlined.”

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