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Development of scintillation detectors based on avalanche microchannel photodiodes

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Avalanche Microchannel PhotoDiodes (AMPDs) are solid state photodetectors with high internal gain and density of independent channels up to $10^4/\text{mm}^2$.

They are potential substitutes for photomultiplier tubes in a wide variety of applications in nuclear physics and nuclear medicine. The use of AMPDs is most promising when fine segmentation of the detectors and their operation in high magnetic fields is required.

Here we present our ongoing developments of AMPDs and scintillation detectors based on them focusing on position sensitive and fast timing detectors to be used in high magnetic fields and gamma detectors for positron emission tomography.

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