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Large size SiPm matrix for Imaging Atmospheric Cherenkov Telescopes applications

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SiPm photo detectors are nowadays commonly used in many applications. It has been shown that SiPm are “nearly ideals” light sensors for Imaging Atmospheric Cherenkov Telescopes (IACT), however this was proven only for small size telescopes.

For large size telescopes like MAGIC or the future Large Size Telescope (LST) of the Cherenkov Telescope Array project (CTA), a pixel size of some cm² is needed. An analog amplifier and sum stage was built and characterized. A large and compact SiPm matrix prototype, with the associated focusing optics, was assembled into a monolithic light detector with an active area of ~3 cm². The performance of the electronics is tailored for IACT applications, with fast signal and adequate signal/noise ratio.

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