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Silicon Photomultiplier as Photon Sensor for RICH Counter

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An array of 8×8 silicon photomultipliers (SiPMs) was characterised as a position sensitive single photon sensor for Ring Imaging Cherenkov (RICH) counter. To improve the geometric efficiency of the array, light concentrators were designed in a form of truncated pyramids and machined from borosilicate glass. A very high number of photons per Cherenkov ring, approximately 35, was detected with a prototype module in an electron beam at DESY. In this contribution, the losses introduced by the binary operation mode are estimated. The possibility of reducing optical cross-talk in the light concentrators array by employing the Teflon filler is considered and results of optical bench tests and ray tracing simulations are presented.

Registered

Yes

Primary author: TAHIROVIC, Elvedin (University of London (GB))

Co-authors: KRIZAN, Peter (University of Ljubljana); PESTOTNIK, Rok (Jozef Stefan Institute (SI)); KORPAR, Samo

Presenter: PESTOTNIK, Rok (Jozef Stefan Institute (SI))

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