

Timing scintillation detector with SiPM incorporated throughout a scintillator's body

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A timing scintillation detector based on a plastic scintillator tile sized 35x5x1 cm³ and SiPM optical readout has been developed and characterized. For the best uniformity of the detector's response to particle hits across its area, a set of SiPM optical sensors has been incorporated into the scintillator throughout its volume. Time resolution better than 250 ps (sigma) has been achieved for each point of the device. Uniformity of the detector's response is confirmed by amplitude measurements along the tile as well as measurements of the efficiency of scintillation detection, which, on average, is not worse than 99%.

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