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Studies of a possibility to use of a Gas Pixel Detector (GPD) as fast track trigger device

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Gas Pixel Detector (GPD) technology offer new possibilities, which make them very attractive for application in existing and future accelerator experiments and beyond. GPD combine advantages of the Si-pixel detectors and gaseous detectors. They can be produced radiation hard and have low power consumption at relatively cheap technology.Low capacitance of the individual pixel channel allows to obtain a large signal to noise ratio. Using time projection method for GPD readout one obtains 3D track image with precise coordinate and angular information. This feature would allow to achieve performance of one GPD layer equal to a few layers of silicon detectors. Implementation of a fast readout and data processing at the front-end level allows to reconstruct a track segment in less than 1 us and to use the information for the first level trigger generation. The algorithms of data acquisition and analysis are described and the results of simulations are presented in this paper.

Presentation type

Section talk (10+5 min)

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