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Concepts and validations of a pT based tracker trigger using single and double sensors strip modules using CMS data

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One of the proposed solutions for a pT based trigger at SLHC for CMS is based on the concept known as the "cluster width" approach, in which clusters produced by low pT tracks are rejected based on the width of the cluster shape, made either on a single strip sensor or a doublet of strip sensors by a suitable electronics logic at the level of the front-end. This information can then be used in many ways to provide first level trigger primitives.
These kind of modules are inexpensive, and coupled high-speed opto-electronic components this concept provides the simplest solution to the first level trigger for SLHC trackers. We will present the simulation studies aimed to optimize the concept, as well as the basic building blocks of the module and their connectivity. Finally we will provide the experimental validation of it by using data collected by the CMS Tracker during the Cosmic runs in 2008 and 2009 as well as the first collision data from the LHC.

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