

A new timing detector for the CT-PPS detector of CMS

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The CT-PPS detector will be installed in Roman pots positioned on both sides of CMS, ~ 200 meter downstream the interaction point. This detector will measure forward leading protons, allowing detailed studies of diffractive hadron physics and Central Exclusive Production. The main components of the CT-PPS detectors are a silicon tracking system and a timing system, QUARTIC, which measures the Cerenkov radiation emitted by the proton in quartz bars. In this contribution we present a possible alternative to the QUARTIC timing system, based on Ultra-Fast Silicon Detectors (UFSD). UFSD are a novel concept of silicon detectors based on the Low-Gain Avalanche Detector design, which are able to obtain time resolution of the order of ~ 20 ps. The use of UFSD has many attractive features as its material budget is small, the pixel geometries can be tailored to the precise physics distribution of protons, and timing and tracking planes can be house in the same Roman Pots. UFSD prototypes for the CT-PPS have been designed and manufactured by CNM (Barcelona) and FBK (Trento): we will show the first characterizations and new results of these productions and we will also presents first designs of the read-out electronics.

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