

# Study of noise performance of the Monolithic Active Pixel Sensors for the new ALICE Inner Tracking System

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The Inner Tracking System (ITS) is the vertex detector that surrounds the interaction point and plays a key role in tracking of charged particles and secondary vertices determination in ALICE (A Large Ion Collider Experiment) experiment at the LHC. After the LHC reconstruction in 2019-2020, when the luminosity of the collider will be increased more than 10 times, new physical tasks of rare processes registration involving heavy flavours, may be solved by the application of fast and high resolution ALICE Pixel Detector (ALPIDE) based on 180 nm CMOS technology.

In this work the noise characteristics of the full-scale prototypes of the pALPIDE-1,2,3 detectors have been studied. These detectors were developed within the ALICE ITS upgrade project. It has been determined that for selected parameters of pixel front-end electronics the fake hit rate of the pixels does not exceed the level, required by the general concept of the ALICE ITS upgrade.

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