

## Study of noise characteristics of irradiated pixel detectors for the new ALICE Inner Tracking System and the NICA MPD Inner Tracking Detector

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The Inner Tracking System (ITS) plays a key role in the precise determination of secondary vertices in high energy hadron collisions in A Large Ion Collider Experiment (ALICE) at the Large Hadron Collider (LHC). After the upgrade in 2020 the beam luminosity of the LHC will be increased by a factor of ten refers to Pb-Pb collisions. This will provide new opportunities of studies of rare processes in high energy hadron collisions including the formation of short-lived particles containing heavy-flavour quarks. New Monolithic Active Pixel Sensors (MAPS) will be used to meet the challenging requirements of high precision tracking of charged particles and of secondary-vertices determination. These sensors can work at high radiation doses with low noise rates and therefore could also be used for the Inner Tracking System of the new Multi-Purpose Detector (MPD) at the collider NICA (Nuclotron-based Ion Collider fAcility). Extensive studies of new sensors were conducted in the course of preparations for the upgrade. As a part of this activity, the given report presents the investigations of some main characteristics and noise performance of several irradiated MAPS sensors. These studies were performed at various temperatures using special experimental set-up equipped with a cryogenic module.

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**Primary author:** Mr NESTEROV, Dmitrii (St Petersburg State University)

**Presenter:** Mr NESTEROV, Dmitrii (St Petersburg State University)

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