

First measurements on the CASSIA Sensor (CMOS Active Sensor with Internal Amplification)

Monday, June 17, 2024 2:00 PM (15 minutes)

The CASSIA Project (CMOS Active Sensor with Internal Amplification) aims to develop monolithic MAPS with internal signal gain and low noise in a widely used CMOS imaging process towards a broad range of applications. Monolithic CMOS sensors with internal gain can provide several advantages for future monolithic CMOS detector systems: Due to internal amplification these sensors produce higher input signal amplitude enabling simplification of in-pixel electronics, which can be exploited for low-power amplification circuits (e.g. for ultra-light detector systems operating at low power dissipation). Internal signal amplification also promise superior timing resolution in fine-pitch MAPS for future 4D tracking applications or time-tagging application. Furthermore improved signal-to-noise can enable extended operation in high radiation environment after suitable engineering of the gain layer.

The current developments are based on the Tower Semiconductor CIS 180nm in view of later portability towards other process including smaller node size process (e.g. 65nm). A first prototype CASSIA sensors has been manufactured in 2023 in an MPW in the TJ 180nm process. The presentation will introduce the specifics of the CASSIA sensor and present the first results in static IC tests, photo-gain measurements as well as first signal measurements in response to a 1064nm pulsed laser.

Type of presentation (in-person/online)

in-person presentation

Type of presentation (scientific results or project proposal)

Presentation on scientific results

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