Contribution ID: **592**   Type: **Talk**

Measurement results of the MALTA monolithic pixel detector

Thursday, 21 February 2019 16:30 (20 minutes)

MALTA is a full scale monolithic pixel detector implemented in ToweJazz 180nm CMOS technology. The small pixel electrode allowed for the implementation of a fast, low noise and low power front-end, which is sensitive to the charge released by ionizing radiation in a 20-25 um deep depleted region. The novel asynchronous matrix architecture is designed to ensure low power consumption and high rate capability. Such features make MALTA a possible candidate for the outer layer of ATLAS Inner Tracker (ITk) upgrade.

Unirradiated MALTA sensors, as well as chips irradiated with neutrons and X-rays, have been extensively tested in laboratory measurements and with high energy particle beams. This contribution will discuss the results of this measurements campaign and will address the further improvements that are being implemented in the next versions of the chip.

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Session Classification: Semiconductor Detectors

Track Classification: Semiconductor Detectors