

MALTA monolithic active pixel sensor Test Beam results

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The MALTA monolithic active pixel sensor is a full-scale particle detector in the Tower Semiconductor 180 nm architecture, with a small collection electrode design. It features a novel asynchronous readout based on a custom designed oversampling of a 37-bit wide bus and low front end power consumption ($<80 \text{ mW/cm}^2$). Coupled with radiation hardness up to $1 \times 10^{15} \text{ neq} \times \text{cm}^2$ (NIEL) and 80 Mrad (TID), MALTA is an interesting candidate for the inner radii tracking modules for HL-LHC and beyond.

MALTA has been extensively tested (both irradiated and un-irradiated samples) in the SPS CERN test beam and with radioactive sources in the lab. Over time, multiple iterations have taken place on the initial MALTA chip design. Results from these measurement campaigns will be presented and their implications on future chip design iterations will be discussed.

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