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## The High-Voltage Monolithic Active Pixel Sensor for the Mu3e Experiment

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The Mu3e experiment searches for the lepton flavor violating decay  $\mu^+ \rightarrow e^+e^-e^+$ . We are aiming for a sensitivity of one in  $10^{16}$   $\mu$ -decays. To measure the momentum and vertex position of low momentum electrons (10 - 53 MeV/c) originating from such a rare decay with high precision, a tracking detector built from High-Voltage Monolithic Active Pixel Sensors (HV-MAPS) is implemented.

The MUIPX chips are HV-MAPS designed for Mu3e and are implemented in 180 nm HV-CMOS technology. HV-MAPS is the technology of choice because it can be thinned to  $50\ \mu\text{m}$ , is radiation-tolerant, has a high time resolution, and is low cost.

Furthermore, the pixel electronics are embedded inside the sensor chip to reduce the material budget.

Performance results of the MUIPX4 chip are presented.

In 2013, we tested the MUIPX4 chip using a 1 - 6 GeV electron beam at DESY.

The discussed results include the spatial resolution, time resolution, and efficiency of the MUIPX4 chip.

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