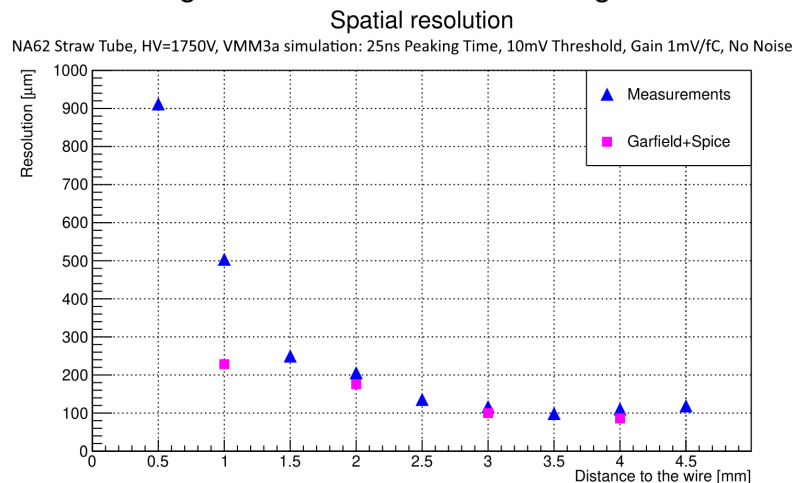


# VMM3 ASIC as a potential front end electronics solution for future Straw Trackers

A number of operating and future experiments use Straw Tube detectors for precise tracking. Track coordinates are reconstructed on the measured signal arrival time defined by the drift time of primary electrons from the track to the anode wire. In some application additional measurements of the particle energy loss  $dE/dx$  may be required.

Garfield simulation of a straw tube response interfaced to the LTSpice electronics simulation package. This approach allows efficient optimization of the signal circuit path and VMM3a operation mode, and supports performance studies for Straw Trackers operated in the magnetic field and with different gas mixtures.



VMM3 Application Specific Integrated Circuit (ASIC) is widely used as readout of micro-pattern gas detectors.

- flexible settings of analogue input circuitry
- charge measurements (nominally 10b ADC)
- time measurements (nominally 8b TDC)
- time-at-threshold (T@T)
- time-at-peak (T@P)

First systematic results on the performance of straw drift tubes operated with a VMM3 and VMM3a -based readout are being obtained at lab and at the SPS muon testbeam.

