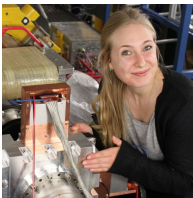
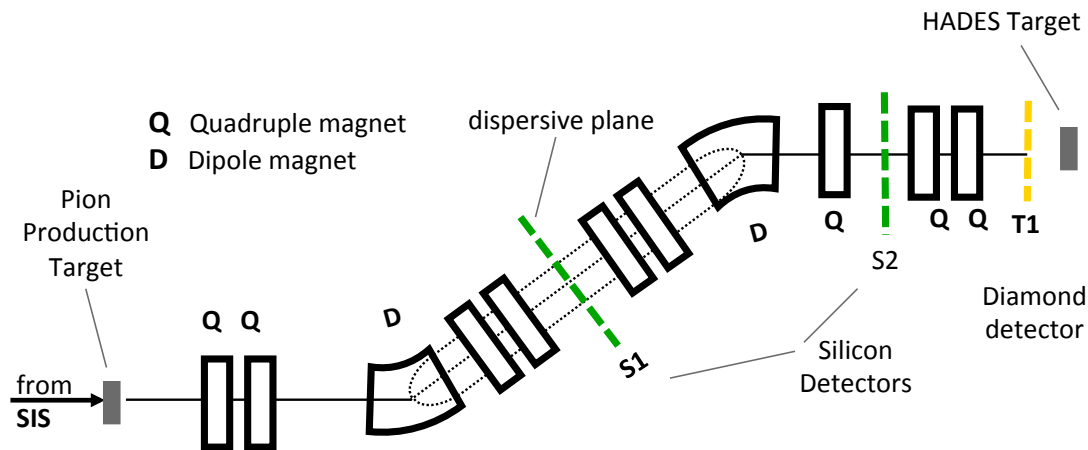


CERBEROS: a Tracking System for Secondary Pion Beams at the HADES Spectrometer

Secondary pion beam production: N beam (10^{11} particles/s) on a Be target

- Wide momentum spread ($\Delta p/p = 8\%$) and spatial spread of the pion beam
 - Requirement for exclusive analysis: momentum resolution $< 0.5\%$
- CERBEROS: momentum measurement & online beam monitoring



Requirements:

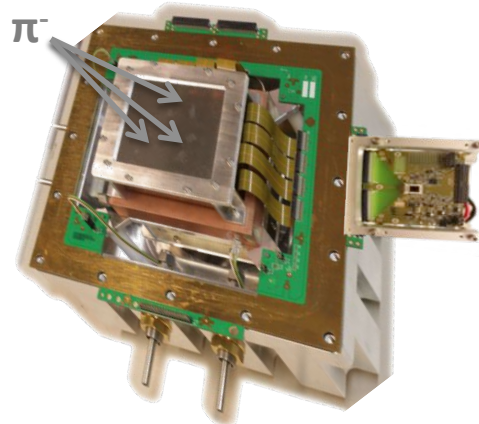
- Cope with high beam rates (up to 10^7 particles/s)
- In-vacuum operation (10^{-7} mbar)
- Minimal multiple scattering
- Position sensitive:
 - Provides four spatial coordinates to evaluate the beam momentum on the basis of the beam optics transport code

CERBEROS: a Tracking System for Secondary Pion Beams at the HADES Spectrometer

CONFIGURATION OF THE 1st STATION

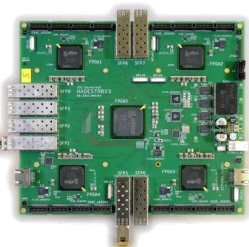
Double-sided silicon sensor:

- 10 x 10 cm²
- 300 μm thick
- 2 x 128 strips
- p-type bulk



TRB3 acquisition system:

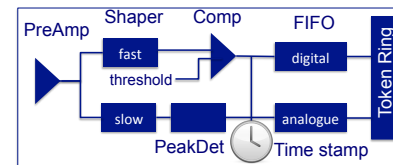
- Highly customizable
- FPGA read-out board
- GbE connectivity



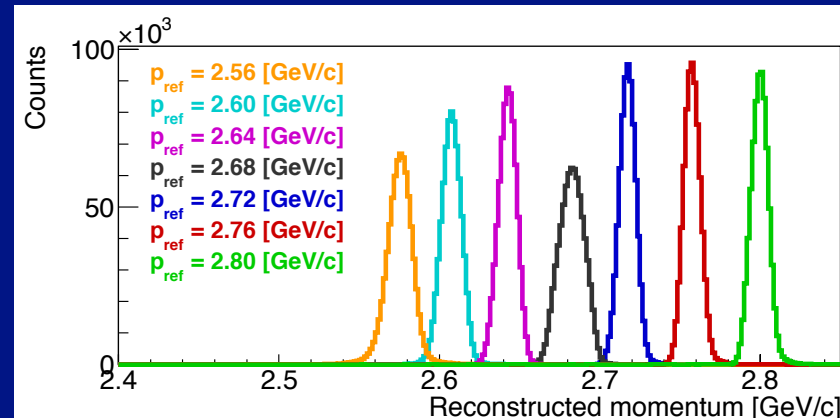
→ time window selection and event building

n-XYTER front-end read-out:

- **Self-triggered** architecture
- Internal **time stamp generator**
- 32 MHz read-out, on average 160 kHz



Momentum Calibration with a proton beam



→ Resolution: $0.18\% \leq \sigma \leq 0.29\%$,
better than the requirement (0.5%)