

# The NA62 GigaTracker

*Thursday, February 18, 2016 10:15 AM (20 minutes)*

The GigaTracker is an hybrid silicon pixel detector built for the NA62 experiment aiming at measuring the branching fraction of the ultra-rare kaon decay  $K^+ \rightarrow \pi^+ \nu \bar{\nu}$  at the CERN SPS. The detector has to track particles in a beam with a flux reaching  $1.3 \text{ MHz/mm}^2$  and provide single-hit timing with 200ps RMS resolution for a total material budget of less than  $1.5 X_0$ . The tracker comprises three  $60.8\text{mm} \times 27\text{mm}$  stations installed in vacuum ( $\sim 10^{-6} \text{ mbar}$ ) and cooled with liquid  $\text{C}_6\text{F}_{14}$  circulating through micro-channels etched inside few hundred of microns thick silicon plates. Each station is composed of a  $200\mu\text{m}$  thick silicon sensor readout by  $2 \times 5$  custom  $100\mu\text{m}$  thick ASIC, called TDCPix. Each chip contains  $40 \times 45$  asynchronous pixels, each  $300\mu\text{m} \times 300\mu\text{m}$  and is instrumented with 720 time-to-digital converters with 100ps bin. In order to cope with the high rate, the TDCPix is equipped with four 3.2Gb/s serialisers sending out the data. We will describe the detector and the results from the 2015 NA62 run.

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**Session Classification:** Semiconductor Detectors

**Track Classification:** Semiconductor Detectors