

## The NA62 Gigatracker

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 200 ps RMS resolution for a total material budget of less than  $0.5\% X_0$  per station. The tracker comprises three  $63.1 \text{ mm} \times 29.3 \text{ mm}$  stations installed in  $10^{-6} \text{ mbar}$  vacuum and cooled with liquid C6F14 circulating through microchannels etched inside 130  $\mu\text{m}$  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 100 ps bin time-to-digital converters. In order to cope with the high rate, the TDCPix is self-triggered and data are sent out through four 3.2 Gb/s serialisers. We will describe the detector and the results from the 2014 NA62 run.

**Primary author:** PERRIN-TERRIN, Mathieu (CERN)

**Presenter:** PERRIN-TERRIN, Mathieu (CERN)