

# Operational experience with the NA62 Gigatracker

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The Gigatracker is a hybrid silicon pixel detector developed for the NA62 experiment at CERN, which aims 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 75 GeV/c hadron beam with a flux reaching 1.3 MHz/mm<sup>2</sup> and provide single-hit timing with better than 200 ps r.m.s. resolution for a total material budget of less than 0.5% X<sub>0</sub> per station. The tracker comprises three 61mm×27mm stations installed in vacuum ( $\sim 10^{-6}$  mbar) and cooled with liquid C<sub>6</sub>F<sub>14</sub> circulating through micro-channels etched inside few hundred of microns thick silicon plates. Each station is composed of a 200μm thick planar silicon sensor bump-bonded to 2×5 custom 100μm thick ASIC, called TDCPix. Each chip contains 40×45 asynchronous pixels, each 300μm×300μm and is instrumented with 720 time-to-digital converter channels with 100 ps bin. In order to cope with the high rate, the TDCPix is equipped with four 3.2 Gb/s serializers sending out the data. Detector description, operational experience and results from the NA62 experimental runs will be presented.

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