

## The Thermo-Mechanical Integration of the NA62 GigaTracker

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The NA62 collaboration will pioneer the use of on-detector microfluidic cooling systems with the implementation of silicon microchannel plates in the GigaTracker (GTK) pixel detectors in the fall of 2014.

The cooling plates consist of 130  $\mu\text{m}$  silicon substrates in which 150 microchannels are embedded. They have a rectangular cross-section of 70 x 200  $\mu\text{m}$  and they cover an area of 45 x 60 mm to actively remove, with liquid C6F14, the power dissipated by the TDCPix readout ASICs bump-bonded to the backside of the GTK sensors. The microfluidic cooling plates are also at the core of the mechanical integration of the GTK system. They provide structural support to the sensor and TDCPix chips interfacing them to the read-out board.

After reviewing the design, prototyping, experimental characterization and validation of this cooling system, the paper will focus on the integration of the 3 GTK detector assemblies in the beam line of the NA62 experiment.

### Summary

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