

# The Gigatracker, the silicon beam tracker for the NA62 experiment at CERN.

Thursday, 21 February 2019 10:15 (20 minutes)

The Gigatracker is the NA62 beam tracker. It is made of three  $63.1\text{mm} \times 29.3\text{mm}$  stations of  $300\mu\text{m} \times 300\mu\text{m}$  hybrid silicon pixel detectors installed in vacuum ( $\sim 10^{-6}\text{mbar}$ ).

The beam particles, flowing at 750 MHz, are traced in 4-dimensions by means of time-stamping pixels with a design resolution of 200ps. This performance has to be maintained despite the beam irradiation amounting to a yearly fluence of  $2 \times 10^{14} 1\text{ MeV eq. n/cm}^2$ .

The detector material minimization is paramount, as the detector faces the full beam. The station material budget is reduced to  $0.5\%X_0$  by using (HEP world first) microchannels cooling.

We will describe the detector design and performances during the NA62 runs.

**Primary authors:** FEDERICI, Luca (CERN); AGLIERI RINELLA, Gianluca (CERN); ALVAREZ FEITO, Diego (CERN); ARCIDIACONO, Roberta (Universita Del Piemonte Orientale (IT)); BIINO, Cristina (INFN Torino (IT)); BONACINI, Sandro (CERN); CECCUCCI, Augusto (CERN); CHIOZZI, Stefano (Universita di Ferrara & INFN (IT)); CORTINA GIL, Eduardo (Universite Catholique de Louvain (UCL) (BE)); COTTA RAMUSINO, Angelo (Universita di Ferrara & INFN (IT)); DEGRANGE, Jordan (CERN); FIORINI, Massimiliano (University and INFN Ferrara); GAMBERINI, Enrico (CERN); GIANOLI, Alberto (Universita di Ferrara & INFN (IT)); KAPLON, Jan (CERN); KLEIMENOVA, Alina (Universite Catholique de Louvain (UCL) (BE)); KLUGE, Alex (CERN); MAPELLI, Alessandro (CERN); MARCHETTO, Flavio (Universita and INFN-Torino(IT)); MIGLIORE, Ernesto (Universita e INFN Torino (IT)); MINUCCI, Elisa (Universite Catholique de Louvain (UCL) (BE)); MOREL, Michel (CERN); NOEL, Jerome (CERN); NOY, Matthew (CERN); PERKTOLD, Lukas (Graz University of Technology (AT)); PERRIN-TERRIN, Mathieu (CERN); PETAGNA, Paolo (CERN); PETRUCCI, Ferruccio (Universita di Ferrara); POLTORAK, Karolina (AGH University of Science and Technology (PL)); ROMAGNOLI, Giulia (Universita e INFN Genova (IT)); RUGGIERO, Giuseppe (Lancaster University (GB)); VELGHE, Bob (TRIUMF (CA)); WAHL, Heiner (Universita e INFN, Ferrara (IT))

**Presenter:** FEDERICI, Luca (CERN)

**Session Classification:** Semiconductor Detectors

**Track Classification:** Semiconductor Detectors