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The NA62 LAV front-end electronics and the L0 trigger generating firmware

The aim of the NA62 experiment is to measure the BR(K+ -> pi+ nu nu bar) to within about 10%.
The large-angle photon vetoes (LAVs) must detect particles with better than 1 ns time resolution and 10% energy resolution over a very large energy range in order to reject the dominant background.
A low threshold, large dynamic range, Time-over-threshold based solution has been developed for the LAV front end electronics (LAV-FEE). Our custom 32 channel 9U board uses a pair of
low threshold discriminators for each channel to produce LVDS logic signals. The achieved time resolution obtained in laboratory, coupled to an HPTDC based readout board, is ˜ 150 ps.
For LAV-FEE, a FPGA-based level-0 trigger providing slewing-corrected trigger time with similar precision has also been developed.

Primary authors: ANTONELLI, Antonella (Istituto Nazionale Fisica Nucleare (IT)); Dr GONNELLA, Francesco (LNF (IT)); MOULSON, Matthew David (INFN); Dr RAGGI, Mauro (LNF INFN); SPADARO, Tommaso (Istituto Nazionale Fisica Nucleare (IT))

Presenter: Dr GONNELLA, Francesco (LNF (IT))

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