

# Trigger for Kaon rare decays at the NA62 experiment at CERN SPS

*Friday 13 September 2013 14:00 (45 minutes)*

Decisive tests of SM predictions or indirect evidence of new physics can be achieved with the study of rare kaon decays. The main goal of the NA62 experiment at the CERN SPS is to measure the branching ratio of the ultra-rare  $K^+ \rightarrow \pi^+ \nu \bar{\nu}$  decay with a 10% accuracy. The NA62 strategy foresees the collection of about 100 events of the  $K^+ \rightarrow \pi^+ \nu \bar{\nu}$  decay, with a signal to background ratio of 10:1, in two years of data taking starting at the end of 2014. The intense flux needed in rare decay experiments implies the design of high-performance triggering and data acquisition systems, which minimise the dead time while maximising data collection reliability. The efficiency of the online selection of  $K^+ \rightarrow \pi^+ \nu \bar{\nu}$  events and the lossless readout at high rate represent the key issues in the NA62 trigger architecture design. The main features of the online and readout systems will be presented.

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