

## THE NA62 RICH DETECTOR

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The CERN NA62 experiment aims to measure the ultra-rare charged kaon decay into one charged pion and two neutrinos with a 10% accuracy. The experiment will profit of the existing infrastructure used until now by the NA48 experiment, but new detectors will be built to match the new requirements.

The main background is due to charged kaon decay into a muon and a neutrino, where a total rejection factor of  $4 \times 10^{-13}$  must be reached:  $8 \times 10^{-6}$  can come from kinematics (missing mass cut),  $10^{-5}$  from the different penetration power between pion and muon,  $5 \times 10^{-3}$  must come from pion-muon Cherenkov angle separation in a momentum range between 15 and 35 GeV/c. To provide such a very demanding task a RICH detector filled with Neon at atmospheric pressure, 17 m long and equipped with 2000 photomultipliers has been proposed. The RICH detector must also provide the pion crossing time with a resolution of 100 ps in order to minimize wrong matching with the mother particle measured by an upstream detector.

The details of the RICH project will be described. A RICH prototype of the same length equipped with 96 PM has been built and tested on a pion beam at CERN in the 2007 fall: the results of this test beam will be presented. A second test with an upgraded version of the RICH prototype, equipped with 414 PM will be performed in the 2009 spring. The final RICH detector is supposed to be completed in time for the NA62 commissioning run foreseen in 2011.

