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## The NA62 RICH detector

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The NA62 experiment is designed to measure the very rare kaon decay  $K^+ \rightarrow \pi^+ \nu \bar{\nu}$  at the CERN SPS with a 10% accuracy. The Standard Model prediction for the branching ratio is  $(8.5 \pm 0.7) \times 10^{-11}$ . One of the challenging aspect of the experiment is the suppression of the  $K^+ \rightarrow \mu^+ \nu \mu^-$  background at the  $10^{-12}$  level. To satisfy this requirement a Ring Imaging Cherenkov Detector (RICH), able to separate  $\pi^\pm$  from  $\mu^\pm$  in the momentum range between 15 and 35 GeV/c, with a  $\mu$  rejection factor better than  $5 \times 10^{-3}$ , is needed. The RICH must also have a time resolution of about 100 ps to disentangle accidental time associations of beam particles with pions. The RICH will have a very long focal length (17 m) and will be filled with Ne gas at atmospheric pressure. Two test beams were held at CERN in 2007 and 2009 with a RICH prototype. The results of the two test beams will be presented: the  $\mu$  misidentification probability is found to be about 0.7% and the time resolution better than 100 ps in the whole momentum range.

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