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The Kaon Identification Detector for the NA62 Experiment at CERN

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The NA62 Experiment aims to measure the branching ratio of the ultra-rare kaon decay $K^+ \to \pi^+ \nu\bar{\nu}$ with 10\% precision, collecting $\sim$ 100 events in 2 years of data taking, starting in 2014. Assuming the value of the branching ratio as predicted by the SM ($BR(K^+ \to \pi^+ \nu\bar{\nu}) = (8.5 \pm 0.7) \times 10^{-11}$), to collect enough statistics a high-intensity kaon beam is needed.
The highest intensity hadron beam available at CERN is a 800˜MHz unseparated secondary beam, in which the kaon component is only the 6\% (50˜MHz average). This means that pions and protons could contribute significantly to the background interacting with the passive material on the beamline. Therefore, a kaon identification detector with a time resolution
$lesssim$100˜ps and with a kaon tagging efficiency˜
$gtrsim$95\% is essential to achieve the proposed level of sensitivity. The KTAG — an upgrade of the existing Differential Cherenkov detector CEDAR — has been developed to stand the high kaon rate and to achieve the proposed performances. In this talk the KTAG detector will be described and the results from the NA62 Technical Run in 2012 will be shown.

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