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The Photon Veto System for the P326 Experiment at CERN

The P326 experiment at CERN aims to a very rare decay, $K^+ \rightarrow \pi^+ \nu \bar{\nu}$, immersed in a overwhelming $K^+ \rightarrow \mu^+ \nu$, $K^+ \rightarrow \pi^+ \pi^0$ (and other decays) background. This calls for an impressive rejection capability (10^{12}) in order to keep a significant signal/background ratio while keeping a good overall efficiency. One of the key components of the detector is the photon veto system which should have a global π^0 inefficiency of 10^{-8} or better and should almost hermetically cover the decay volume down to zero degrees. The detectable energies range from about 100 MeV to almost 70 GeV. The photon veto system will be composed by a large angle veto system, in the form of 12 rings installed along the decay region and covering angles larger than 50 mr, by the NA48 Liquid Krypton Calorimeter for intermediate angles and by Intermediate Ring Calorimeters and a Small Angle calorimeter to close the acceptance at small angles. An intense R&D program for these detectors is progressing. Prototypes of the large angle vetoes and of the Small Angle Calorimeter have been built. A run with a tagged photon beam at CERN has been performed to measure the LKr calorimeter inefficiency to photons down to about 4 GeV. The talk will review the various components of the system and present the latest results on the tests of the prototypes.

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