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R&D for the high momentum particle identification upgrade detector for ALICE at LHC

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The Very High Momentum Particle Identification (VHMPID) detector has been proposed as upgrade for the ALICE experiment at LHC to extend charged hadron track-by-track identification in the momentum range 5-25 GeV/c. It is a RICH counter with focusing geometry using pressurized perfluorobutane (C₄F₈O) as Cherenkov radiator. Three options are currently being investigated for the photon detector: a MWPC with CsI photocathode, a triple Thick GEM counter with top element coated with CsI and a commercial micro-channel plate with alkali photocathode (Photonis Planacon XP85012). We will discuss the results of beam tests performed on RICH prototypes using both liquid C₆F₁₄ radiator (in proximity focusing geometry for reference measurements) and for the first time pressurized C₄F₈O gaseous radiator. In particular we will present studies of a CsI based gaseous photon detector equipped with a MWPC having adjustable anode-cathode gap, aiming at the optimization of the chamber layout and performance in the detection of single photoelectrons.

quote your primary experiment

ALICE

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