

Abstract Submitted
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Monitoring Mirror Misalignment in a Ring Image Cherenkov Detector for ALICE¹ ANGELA MOORE, AUSTIN HARTON, EDMUNDO GARCIA, Chicago State University, VHMPID COLLABORATION — We propose a laser system to monitor mirror misalignment in a Ring Imaging Cherenkov (RICH) Detector to be used in the Very High Momentum Particle Identification Detector (VHMPID) of ALICE. The VHMPID detector identifies charged hadrons in the 10 GeV/c to 25 GeV/c momentum range. The RICH detector determines a particle's velocity through a medium by focusing the Cherenkov emission onto a photon detector using a 12 segment spherical mirror and calculating from that image the Cherenkov angle. A major issue in the RICH detector is that changes in temperature, humidity and other environmental conditions can cause movements in mirror position leading to errors when determining the Cherenkov angle. To detect this mirror misalignment, we are developing a system to individually monitor each mirror segment by illuminating it with a single laser beam and tracking the reflection using a photo detector array. In this presentation, we will discuss methods of quantifying mirror misalignment, techniques for distributing laser radiation to mirror segments and approaches to monitoring the misalignment.

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