

Abstract Submitted
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The CLAS12-RICH hybrid geometry¹ GIOVANNI ANGELINI², The George Washington University, CLAS12-RICH COLLABORATION — A Ring-imaging Cherenkov detector (RICH) has been designed for the CLAS12 spectrometer (JLAB, Hall B) in order to increase the particle identification. Among the approved physics program focused upon 3D imaging of the nucleon, some Semi Inclusive Deep Inelastic Scattering experiments (E12-09-007, E12-09-008, E12-09-009) demand an efficient kaon identification across the momentum range from 3 to 8 GeV/c. The detector exploits a novel elaborated hybrid geometry based on a complex focusing mirror system that will reduce the area instrumented with photon detectors. For forward scattered particles ($\theta < 12^\circ$) with momenta $p = 3-8$ GeV/c, a proximity imaging method with direct Cherenkov light detection will be used. For larger angles of $12^\circ < \theta < 35^\circ$ and momenta of $p = 3-6$ GeV/c, the Cherenkov light will be focused by a spherical mirror, undergo two further passes through the aerogel radiator and will be reflected from planar mirrors before detection. A carefully study on reflections has been performed considering microscopic and macroscopic effects. In addition, a new feature has been introduced in the CLAS12 simulation software in order to generate the geometry of the detector by using a computer-aided design (CAD) file for an accurate geometrical description.

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