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Hybrid RICH detector

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A large area ring-imaging Cherenkov detector has been designed to provide clean hadron identification capability in the momentum range from 3 GeV/c to 8 GeV/c for the CLAS12 experiments at the upgraded 12 GeV Continuous Electron Beam Accelerator Facility (CEBAF) of Jefferson Lab. The adopted solution foresees a novel hybrid optics design based on an aerogel radiator, composite mirrors, and a densely packed and highly segmented photon detector (multi-anode photomultiplier tubes). Depending on the incident particle track angle, Cherenkov light will either be imaged directly (forward tracks) or after two reflections and passes through the aerogel (large angle tracks). The installation of the RICH detector in CLAS12 is scheduled for the fall 2017. In this presentation the detector design will be described, along with the results on individual detector components tests and from testbeam and cosmic ray studies.