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A RICH detector for the ALADDIN experiment

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ALADDIN is a proposed fixed-target experiment at the LHC (Letter of Intent submitted and reviewed by the LHCC; Technical Design Report in preparation) designed to measure the electromagnetic dipole moments of the Λ_c^+ and Ξ_c^+ baryons. Protons from the LHC beam halo are deflected onto a fixed solid target, producing highly boosted charm baryons. These baryons are then channeled through a bent crystal, where the intense electric field between the atomic planes of the crystal induces a measurable spin precession.The Λ_c^+ and Ξ_c^+ baryons predominantly decay into protons, kaons, and pions, with average momenta exceeding 500 GeV/c. To achieve efficient particle identification up to 1 TeV, a gaseous RICH detector with unprecedented angular resolution is required. This contribution presents the latest developments in the detector design, focusing on two alternative technologies for Cherenkov photon detection: one based on MPPCs/SIPMs and the other on MCP-PMTs.

Author: SPADARO NORELLA, Elisabetta (University and INFN of Genoa)

Co-authors: BUCCI, Francesca (INFN Florence); PANICHI, Ilaria (INFN Florence)

Presenter: SPADARO NORELLA, Elisabetta (University and INFN of Genoa)

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