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Detector concept combining Cherenkov and TOF information

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A detector concept is described that has been developed as a possible solution to the identification of low momentum hadrons in the proposed upgrade of the LHCb spectrometer. The detector consists of a DIRC-style quartz plate placed perpendicular to the beam axis, with photon detectors arranged around the periphery of the plate (outside the acceptance of the spectrometer). Cherenkov light produced by a charged particle traversing the plate is trapped within it by total internal reflection, and then focused onto the photodetectors. A combination of the precise measurement of the arrival time of the photons, and their position, should allow the time-of-flight of the particle to be reconstructed with a precision of ~ 10 ps, sufficient to satisfy the physics requirements. The expected performance from detailed simulation, and R&D that is underway to realize this concept, will be presented.

Please indicate "poster" or "plenary" session. Final decision will be made by session coordinators.

plenary

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Classification de Session: Novel Cherenkov imaging techniques

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