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## Photon yield and MCP-PMTs in a prototype TORCH detector.

*Tuesday 9 April 2019 11:00 (15 minutes)*

TORCH (Time Of Internally Reflected Cherenkov light) is a novel concept of a Ring Imaging Cherenkov time-of-flight detector, which is being developed with a possible application in an upgrade of the LHCb experiment in 2030. Currently it is still in the Research and Development (R&D) phase. It utilises Cherenkov radiation to identify particles at low momenta. It would be located at 10m from the proton-proton interaction point, and consist of a 30 m<sup>2</sup> by 10 mm quartz plate which propagates emitted photons to Micro-Channel Plate Photomultiplier tubes (MCP-PMTs) where they can be captured. Total internal reflection in the detector propagates the photons onto the MCP-PMTs. To achieve a 3-sigma separation between kaons and pions up to 10 GeV/c, a timing resolution of 15 ps per photon is required. This provides the greatest challenge in this project and requires careful testing, performed during the so-called beam tests.

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