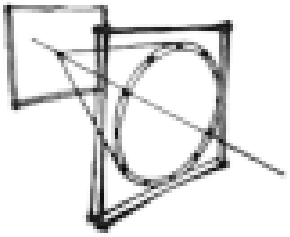

Contribution ID: **22** Type: **Poster**

Performance simulation of BaBar DIRC bar boxes in TORCH

Monday, 5 September 2016 17:10 (30 minutes)

TORCH is a large-area precision time-of-flight detector based on the DIRC principle, proposed to provide positive particle identification of low momentum kaons for the LHCb experiment at CERN. The DIRC bar boxes of the BaBar experiment at SLAC could possibly be reused to form a part of the TORCH detector time-of-flight wall area.

For the implementation of the BaBar bars, new imaging and readout optics are required. Several designs of readout optics have been worked out and their optical resolutions studied, a particular challenge being the design of a performant optics with sufficient angular resolution while keeping to a small volume and leaving the BaBar DIRC boxes unchanged up to and including the bar box exit windows.

The present paper will report on pion-kaon separation powers obtained from analysing simulated photon hit patterns. Different scenarios will be compared, among them the effect of optical imperfections on the detector and reconstruction performance.

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