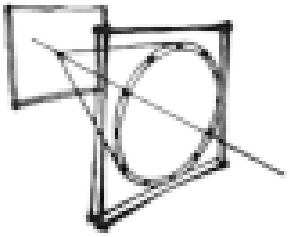

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Testing RICH Upgrade MaPMTs and Readout Electronics at High Rates

Monday, 5 September 2016 17:25 (15 minutes)

One of the biggest challenges for the upgrade of the LHCb RICH detectors from 2020 is to readout the photon detectors at the full 40 MHz rate of the LHC proton-proton collisions. A test facility has been setup at CERN with the purpose to investigate the behaviour of the Multi Anode PMTs, which have been proposed for the upgrade, and their readout electronics at high trigger rates.

The MaPMTs are illuminated with a monochromatic laser that can be triggered independently of the readout electronics. A first series of tests, including threshold scans, is performed at low trigger rates (20 kHz) for both the readout and the laser with the purpose to characterise the behaviour of the system under test. Then the trigger rate is increased in two separate steps. First the MaPMTs are exposed to high illumination by triggering the pulsed laser at a high (20 MHz) repetition rate while the DAQ is readout at the same low rate as before. In this way the performance of the MaPMTs and the attached electronics can be evaluated at high laser exposure rate. In the second step both the laser and the DAQ are triggered at the high rate in order to evaluate the full readout chain.

Registered

Yes

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