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LUCID-3: the upgrade of the ATLAS Luminosity detector for High Luminosity LHC

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The ATLAS physics program at HL-LHC calls for a precision in the luminosity measurement of 1%. To fulfill such requirement in an environment characterized by up to140 simultaneous interactions per crossing (200 in the ultimate scenario), ATLAS will feature several luminosity detectors. LUCID-3, the upgrade of the present ATLAS luminometer (LUCID-2), will fulfill such a condition. In this presentation, two options for LUCID-3 under study are presented: the first is based on photomultipliers (PMT) as for LUCID-2, while the second is based on optical fibers. In the first case, PMTs with a reduced active area are foreseen, placed at a larger distance from the beam-pipe wrt LUCID-2 or in a region with low particle flux, behind the forward ATLAS absorber. In the second option, optical fibers act as both Cherenkov radiators and light-guides to route the produced light to the readout PMTs. The prototypes installed in ATLAS in Run-3 are discussed together with the first results obtained.

Alternate track

I read the instructions above

Yes

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