

Abstract Submitted
for the DNP16 Meeting of
The American Physical Society

A Zero Degree Calorimeter for the High Radiation Environment at LHC¹ JUAN BOHORQUEZ, University of Illinois at Urbana-Champaign and University of Miami, ATLAS COLLABORATION — The two ATLAS Zero Degree Calorimeters(ZDC) are hadron calorimeters that measure the energy of non-colliding nuclear fragments thus providing information on the impact parameter in heavy ion collisions and input for the fast online selection of ultra-peripheral collisions. The ZDCs are located downstream of the straight ATLAS beam pipe section, 140 m from the interaction point. The ZDCs are sampling calorimeters and are composed of alternating layers of tungsten plates and quartz radiator. The extreme radiation environment (up to 20 Grad/yr) causes degradation of the optical performance of the quartz rods, leading to time dependent ZDC performance and frequent repair. A radiation hard ZDC design is being developed at UIUC based on circulating a liquid Cherenkov radiator replacing the present quartz rods. The upgrade aims at using the ZDC in LHC p+Pb runs for the study of nuclear effects in proton structure at low x. The radiation hardness of materials considered for the upgrade will be tested using a passive container that will be installed in place of the ZDC during the ongoing 2016 p+p run at the LHC. The details of the radiation test will be presented together with planned tests on the optical response and isotopic composition of candidate materials after irradiation.

¹REU program supported by NSF Grant PHY-1062690

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Date submitted: 25 Jul 2016

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