The ATLAS Forward Proton Status FCT Fundação Para a Ciência e a Tecnologia CERN/FIS-PAR/0008/2017

Cofinanciado por



The ATLAS Forward Proton

tagging detectors



205 m

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detector (ToF)



Central Exclusive Production:

- Entire momentum loss of the protons goes into the creation of the central system detected in the ATLAS detector
- Outgoing protons remain intact

Exclusive jets:

- Two intact protons + 2 jets
- All particles measured
- Strong kinematic constraints between central state and each of the forward protons
- Small cross section for exclusive processes (demands dedicated trigger to record low jet pT events)

Optobard

LV Stage 2

- 4 silicon tracker planes
- 4x4 L-Quartz bars



Detector Control System (DCS)

Control and monitor of components to ensure the safe detector operation

variety of different systems Large integrated in the ATLAS detector

Supervisory Control And Data Acquisition (SCADA), WinCC OA



The DCS provides tools:

- Finite State Machine (FSM)
- Archiving
- Alerts
- Graphical user interfaces

Independent horizontal **Movement System** of 5 µm step

Independent Vacuum System in each arm (10-40 mbar) **Cooling System** for each station provided by Dry Air Vortex Cooling System (AirCooler)

Air

Cooler

ToF

DAQ

Boards

Level 1 Trigger Performance (SiT)

Study of AFP Level 1 trigger efficiency for data taken during special low-µ runs in 2016 (requires 1 or 2 hits per detector plane)

Level 1 trigger highly correlated with offline reconstructed AFP tracks, thus rather track reconstruction efficiency should be considered

Correlation study between track reconstructed and hits position in the different layers



Secondary vacuum and cooling control

HV, LV Stage1, CAN bus, Optoboard

Hardware Temperature Interlock

VME DAQ Crate

High Level Trigger Implementation

Objectives:

- Select central exclusive (di)jet production
- Use (di)jet system to determine proton track position at AFP
- Compare to the real track measurements in AFP

L1_J75 & AFP_L1xxx

TrigJetRec

• ToF and (di)jects vertices information will be added to reduce background pileup



