



# Sample Project: Participation in Roman Pot Station construction and Detector Assembly to complete a new Detector for ATLAS

Code	EP5362
Programme	FCT
Department	EP
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## Title

Participation in Roman Pot Station construction and Detector Assembly to complete a new Detector for ATLAS

## Description

The ATLAS Forward Proton detector upgrade project (AFP) finished installing one of its two arms: two detector stations located at 205 and 217 m from the ATLAS interaction point can intercept forward protons which are emitted at microradian angles and have energy between 1.5% and 15% lower than the beam energy. AFP is in many ways a small but complete HEP detector: it consists of high-precision pixel trackers, ultra-fast Time-of-Flight detectors, and ATCA standard data acquisition. Mechanically, the motion of the detectors towards the LHC beams is controlled with 10  $\mu\text{m}$  precision, and the system is ultra-high-vacuum qualified. The AFP experiment is an excellent way to get an in-depth introduction to a state-of-the-art HEP detector.

As part of the construction of the second arm to complete the full AFP detector, AFP seeks a student to help with the assembly of the Roman pot station mechanics that moves the detectors close to the LHC beam. In addition, tracking detectors and novel Cerenkov-based Time-of-Flight detectors will be assembled and installed inside the Roman pot. This is an excellent project for a hardware-oriented Technical or Engineering student.

## Skills

Low and High Frequency Engineering: Electrical materials, High voltage technology. Mechanical Engineering: Computer integrated/aided design, Dimensional metrology, Fluid systems, Heat Transfer. Networks and Systems: Micro actuators and motors, Sensors. Programming Languages: C, C++, Java. Theory of Electrical Engineering: Control theory

## Disciplines

Information Technologies, Electrical Engineering, Mechanical Engineering

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