



# Contribution to the operation of the ALFA/ATLAS detector

Code	EP5434
Programme	FCT
Department	EP
Responsible	16987 - Dr. Patrick Fassnacht

## Title

Contribution to the operation of the ALFA/ATLAS detector

## Description

The ALFA/ATLAS detector is measuring the proton-proton total cross-section at the different energies of the LHC. It is composed by a set of 8 detectors installed in the tunnel at distances close to 240m from the interaction point. Data were already taken at the various energies of 7, 8 and 13 TeV. In the years 2016 to 2018 the experiment aims to measure in a totally independent way the absolute luminosity. To get there a special setting of the LHC beam will be required.

The operation of the ALFA detector is quite complex as it is in the very close environment of the LHC machine. Special care in positioning the detectors (as close as 0.5mm from the circulating beam) and in minimizing the background level by proper shielding are key elements to a successful data taking. ALFA is a state-of-art forward detector.

ALFA will get beam in 2018 under very unique running conditions in order to measure with the highest precision the rho parameter which is the ratio of the real part over the imaginary part of the nuclear amplitude, a fundamental parameter.

## Skills

Low and High Frequency Engineering: High voltage technology, Measurement techniques. Mechanical Engineering: Computer integrated/aided design. Networks and Systems: Communication networks, Computer systems, Micro actuators and motors. Theory of Electrical Engineering: Control theory, Signal processing mecha

## Disciplines

Experimental Applied Physics, General Engineering, Mechanical Engineering

To edit this project go to [https://hrapps.cern.ch/auth/f?p=131:4:::P4\\_ID:5434](https://hrapps.cern.ch/auth/f?p=131:4:::P4_ID:5434)