



Sample Project: Contribution to the operation of the ALFA/ATLAS detector

Code	EP5434
Programme	FCT
Department	EP
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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.

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

Disciplines

Experimental Applied Physics, General Engineering, Mechanical Engineering

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