Sample Project: Studies of geodetic and metrological problems

Code	EN5922
Programme	FCT
Department	EN
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Title

Studies of geodetic and metrological problems

Description

Since the epoch of the installation of the LHC, the levelling measurement of the LHC is not easy task as the closure between measurements "outward" and "return" of one sector of 3.3 km is quite often exceeding the tolerances announced by the manufacturer. This phenomena doesn't happen all the time and might be due to meteorological/atmospherical pertubations and the aim of the study is to find the origin of the problem and to propose a solution to avoid it.

During the Long Shut down 1 (LS1), the distance measurements w.r to a stretched wire, which are commonly used for the horizontal determination of the LHC magnets, were affected by a systematic error of some hundred of mm and was detected during the post-processing of the data. Similarly to the above mentioned study, the aim is to find the origin and to propose a solution to get rid of this error

Skills

Surveying: Geodesy, Instruments and sensors, Planimetric & altimetric measurement
use of high accuracy topographical instruments

expert use of post-processing adjustment software

use of Matlab

knowledge of atmospheric perturbation model

initiative, imagination

Disciplines

Architecture/Surveying