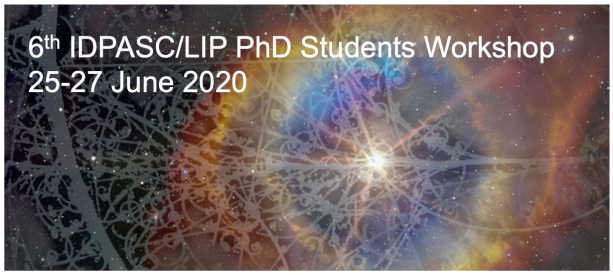

Contribution ID: **53** Type: **not specified**

Muon Tomography applied in the Lousal Mine (Portugal)

Saturday, 27 June 2020 10:45 (12 minutes)

Muon Tomography is an imaging technique that uses muons as a means of observing the earth's subsurface and with it obtain muographs that display the column density distribution of the surveyed region. The University of Évora and the LIP intend to develop muon telescopes and apply the muon tomography in the geophysics field.
The detection will take place inside the Lousal Mine, about 18 m below the surface. The telescope will do a geological reconnaissance of the well-known ground above the mine to test its performance and sensitivity.
A working prototype was put in place to gather preliminary information and establish the requirements of the equipment to build a muon telescope.
Simulations of the muon detection have been made using GEANT4 software. The simulations allow to study the expected result of muographs produced by the muon flux passing through a simulated ground with different characteristics.
A preliminary geophysical survey was carried out on the surface above the mine to test the response of the ground to the geophysical methods employed.
The aim of this work is to apply the muon tomography in Lousal Mine and define this technique as a suitable probe technique in the geophysical field. We also want to combine muography and gravimetry information, from a gravimetric survey that will be carried on site, through a joint inversion of both data sets to obtain 3D density profiles of the observed region.

Primary authors: TEIXEIRA, Pedro (LIP / UÉvora); ANDRINGA, Sofia (LIP); ASSIS, Pedro (LIP); BEZZEGHOUD, Mourad (University of Évora); BLANCO, Alberto (LIP); BORGES, José (University of Évora); CALDEIRA, Bento (University of Évora); CAZON, Lorenzo (LIP); FERREIRA, Miguel (LIP Lisboa); LOPES, Luis (LIP Coimbra); NOGUEIRA, José (LIP Lisboa); PIMENTA, Mário (LIP); PINTO, Álvaro (CCV Lousal); RELVAS, Jorge (CCV Lousal); TOMÉ, Bernardo (LIP)

Presenter: TEIXEIRA, Pedro (LIP / UÉvora)

Session Classification: Session 9