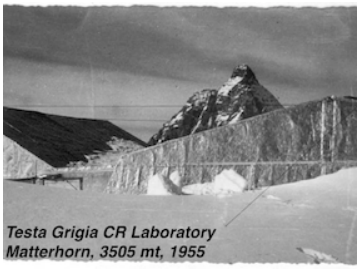

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Utilization of a shallow underground laboratory for studies of the energy dependent CR solar modulation

martedì 6 settembre 2016 16:30 (1O 45m)

The aim of the present work is to investigate possibility of utilizing a shallow underground laboratory for the study of energy dependent solar modulation process and to find an optimum detector configuration sensitive to primaries of widest possible energy range for a given site. The laboratory ought to be equipped with single muon detectors at ground level and underground as well as the underground detector array for registration of multi-muon events of different multiplicities. The response function of these detectors to primary cosmic-rays is determined from Monte Carlo simulation of muon generation and propagation through the atmosphere and soil. The simulation predictions in terms of flux ratio, lateral distribution, response functions and energy dependencies are tested experimentally and feasibility of proposed setup in Belgrade underground laboratory is discussed.

Summary

The possibility of utilizing a shallow underground laboratory for the study of energy dependent solar modulation of CR and to find an optimum detector configuration sensitive to primaries of widest possible energy range for a given site is investigated, by means of computer simulation based on CORSIKA and GEANT packages, combined with the experiment.
Median rigidity o response of the ground level detector is 68 GeV,single underground detector 125 GeV and underground array would be 296 GeV.
Completion of the underground array would enable to study solar modulation on three different energy ranges of the primary particles

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