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Status of the construction of a Muon Tomography Detector for the Study of Geophysical Objects

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In the last two decades, cosmic ray muon-based imaging, or muongraphy, has undergone tremendous development and has found applications in different fields that require penetrating probes in large or high-density volumes. The unique characteristics of this technique make it particularly important for applications including nuclear non-proliferation, spent nuclear reactor fuel monitoring, cargo scanning and imaging of geological structures (volcanoes, mountains, etc.), among others. In this presentation we will show the status of the construction of a muon tomography detector, which is a project developed by the National Commission for Aerospace Research and Development (CONIDA) and the National University of Engineering (UNI) in Lima, Peru.

We will discuss some issues that may influence the final result of the geophysical imaging experiment: the muon energy and time spectrum arriving at different zenith angles and the model of muon propagation through matter. We also describe in detail the simulation chain developed to calculate the flux of cosmic ray muons arriving at sea level in order to estimate the most convenient locations and exposure time of the muon telescope to study a small mountain near the National Engineering University. Although this technology is not new, this is the first time such a project has been developed in the country.

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Yes

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