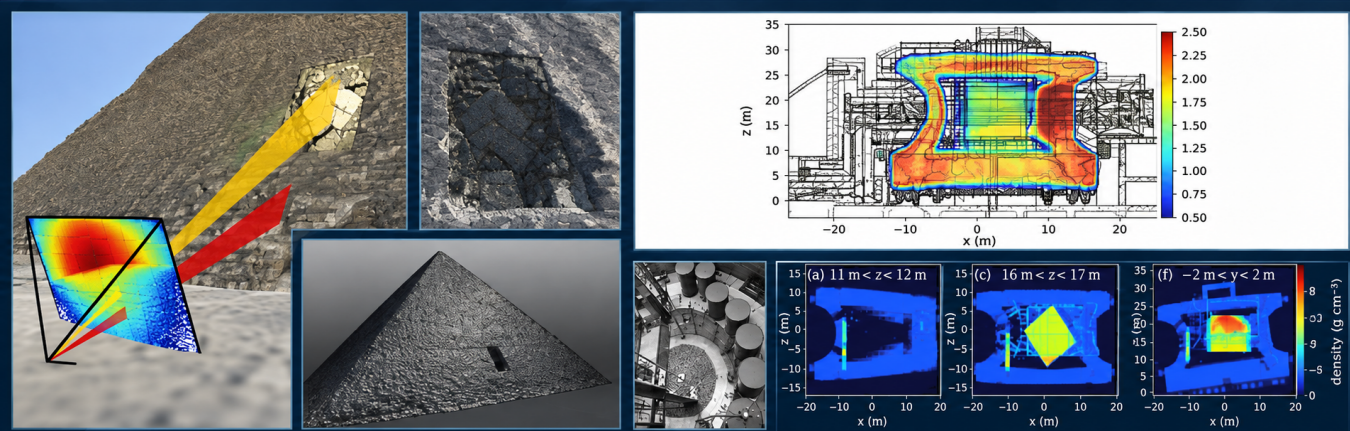


The saga of muon tomography at CEA Saclay: from high-energy particle detector developments to societal applications



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Abstract: Muon tomography is an imaging technique that exploits the limited flux of natural cosmic-ray muons to probe the interior of large and dense structures. At CEA Saclay, the development of this technology emerged from detector and electronics technologies originally developed for high-energy particle physics and has since evolved towards applications far beyond fundamental physics.

This seminar will retrace this technological and scientific journey, from the development of genetic multiplexed resistive Micromegas detectors to the realization of dedicated muon telescopes. The first MultiGen telescope, developed within the WatTo project, demonstrated the potential of muography to probe large-scale structures and subsequently contributed to the ScanPyramids mission, helping reveal previously unknown structures within the Great Pyramid of Khufu.

The talk will then focus on applications in the nuclear field, including the monitoring of reactors during decommissioning or in the event of an incident, as well as the inspection of nuclear installations and waste packages where conventional techniques are difficult or impossible to use.

Beyond these applications, the seminar will discuss the challenges of technology transfer: detector robustness, long-term operation, environmental constraints, gas management, data acquisition and analysis. Ultimately, the story illustrates how technologies born in fundamental physics can become scientific tools for nuclear applications and the exploration of otherwise inaccessible environments.

Jueves , 8 octubre, 12:10h, seminario de Física Nuclear

On-
line



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