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[Abstract]

Gaseous Muon Trackers in Muography

Gergő Hamar^{1*}, Gergely Surányi¹, László Balázs¹, Dezső Varga¹, László Oláh¹, Gábor Nyitrai¹, Ádám Gera¹, Boglárka Stefán¹, Bence Rábóczki¹, Sándor Demők¹.

¹HUN-REN Wigner Research Centre for Physics
ORCID number for G.Hamar: 0000-0002-2268-7830

*Correspondence: Gergő Hamar

Abstract: Muography is a novel imaging technology to reveal the internal density structure of hill-sized objects. The cosmic muons lose slowly their energy and penetrate hundreds of meters into the ground, thus their differential local flux correlates with the density-length they have passed through.

Combining this information with surface- or geological data density-anomalies could be located, that benefits eg. speleology, mining, volcanology, and cultural heritage research.

Detecting and tracking of each passing muon is crucial, while the main challenges for used detector technology are the portability, low power consumption, and robustness against the out-of-the-laboratory environment. Our portable gaseous tracking detector system has been designed and built, and successfully used in several locations, like caves, mines, or near volcanoes.

The presentation will focus on the designed portable tracking system, the main requirements, used detector technology, issues and

solutions; and show results from several muography campaigns in peculiar scenarios.

Keywords: muography, detector physics, gaseous detectors, geophysics