



Contribution ID: 37

Type: **Plenary talk**

Application of Portable Gaseous Detectors for Underground Muography

Wednesday, 24 November 2021 12:15 (20 minutes)

The rapidly evolving field of Muography opens an outstanding way to reveal density anomalies inside hill-sized objects. The cosmic muons lose their energy gradually and penetrate hundreds of meters into the ground, thus their differential local flux correlates with the density-length they traveled through.

In case of underground muography one exploits the low background and the higher flux in close-to-zenith regions, while sub-terrain operations face demanding technical requirements. The main field of interest of this non-invasive imaging are speleology, mining, and disclosure of cultural heritage targets.

The main challenges are the portability, low power consumption, and robustness against the out-of-the-laboratory environment. Portable gaseous tracking detector system has been designed and built, and successfully used for in the last years in several underground locations.

The presentation will focus on the designed portable tracking system, the main technical requirements, and successful measurement campaigns for calibration, exploration of natural caves, and examination of tunnels around the Buda Castle.

Primary authors: Dr VARGA, Dezső (Wigner RCP, Budapest); Dr SURÁNYI, Gergely (MTA-ELTE GGSSRG); Dr HAMAR, Gergő (Wigner RCP, Budapest); Dr BARNAFÖLDI, Gergely G. (Wigner RCP Budapest); Mr NYITRAI, Gábor (Wigner RCP, Budapest University of Technology and Economics); Dr OLÁH, László (Tokyo Uni. ERI); Mr BALOGH, Szabolcs J. (Wigner RCP Budapest); Mr GERA, Ádám (Wigner RCP Budapest)

Presenter: Dr HAMAR, Gergő (Wigner RCP, Budapest)

Session Classification: Instrumentation

Track Classification: Instrumentation