Contribution ID: **409** Type: **Poster**

Low gas consumption in tracking detectors for outdoor applications

Thursday, May 27, 2021 5:12 AM (18 minutes)

The tracking detectors of particle physics are facing new demands in applied physics. Muography is in highlight, where tracking of cosmic muons could reveal the inner structures of geological or archaeological objects. The dedicated R&D shall focus on portability, robustness against outdoor conditions, low consumption, high tracking efficiency, and cost efficiency. A practical choice is gaseous detectors, offering excellent tracking efficiency, good position resolution, and low weight. Our group developed several multi-wire detectors for muography, where the classical MWPC concept was tuned to meet all the former criteria.

Robust and lightweight systems required open-end gas line, meaning continuous gas exhaustion. An application of a proper buffer tube allows reduced consumption, resulting a 0.12 l/h (3 l/day) gas flow in long term outdoor conditions.

The presentation will focus on the limitations of gas consumption, detailing the measurement series and the results.

TIPP2020 abstract resubmission?

Funding information

Primary authors: NYITRAI, Gábor (Wigner RCP, BME, Budapest); HAMAR, Gergő (Wigner RCP, Budapest); VARGA, Dezső (Wigner RCP, Budapest)

Presenter: NYITRAI, Gábor (Wigner RCP, BME, Budapest)

Session Classification: Tech Transfer Posters

Track Classification: Technology Transfer