Contribution ID: **47** Type: **"Rapid fire" talk**

Imaging of scintillation light with coded aperture masks

Tuesday, 18 March 2025 14:50 (5 minutes)

Large volumes of liquid Argon or Xenon constitute an excellent medium for the detection of neutrino interactions and for Dark Matter searches.
Imaging of scintillation light can provide vertexing and tracking information on its own and, when combined with other detection methods, enhances resolution and improves event reconstruction in high-rate environments.
Both Xenon and Argon scintillate in the VUV range, imposing strict requirements on the optical system and SiPMs. A compact camera with both a deep and wide field of view can be achieved using a coded aperture mask.
This presentation describes this imaging system and its reconstruction algorithm using Maximum Likelihood Expectation-Maximization, aimed at providing a three-dimensional map of the energy deposited by charged particles. This approach presents a significant computational challenge, as it requires a GPU optimized implementation.

Primary author: MEI, Filippo (Istituto Nazionale di Fisica Nucleare)

Presenter: MEI, Filippo (Istituto Nazionale di Fisica Nucleare)

Session Classification: Liquid Detectors

Track Classification: Liquid Detectors