Contribution ID : **246** Type : **Oral talk**

Electromagnetic calorimeter PHOS256 current status, performance on cosmic muons and simulation results

Friday, 30 October 2026 12:30 (15)

Homogeneous calorimeters based on scintillation single crystals are widely used in high-energy physics due to their good energy, position and time resolution. A small precise 256-channel photon spectrometer (PHOS256) based on $PbWO_4$ crystals is proposed for an experiment at the U-70 accelerator facility for measurements of spectra of neutral mesons and direct photons with proton, pion, and kaon beams of momenta 26.5–50 GeV/c on nuclear targets.

Such a detector can also be used for measurements of the linear photon polarization using photon conversion into e+e- pair on a dedicated converter in front of the calorimeter via analyzing an asymmetry of clusters containing both particles. The calorimeter's design is optimized using simulations with the Pythia and Geant4 packages. The calorimeter construction will be discussed - the $PbWO_4$ crystals, the avalanche photodetectors attached to the crystals, the main electronics, and the cooling equipment. The reconstruction of photon pairs from π^0 mesons and η mesons will be considered to determine the optimal calorimeter position.

First results on the detector response to the cosmic muons and the comparison with results of Monte-Carlo simulations will be presented.

Primary author(s) : Mr. ALEKSANDROV, Dmitry (NRC "Kurchatov Institute"); Mr. AVERYANOV, Dmitry (NRC "Kurchatov Institute"); Mr. BLAU, Dmitry (NRC "Kurchatov Institute"); Mr. FOKIN, Sergey (NRC "Kurchatov Institute"); Mr. GORDEEV, Pavel (NRC "Kurchatov Institute"); Mr. IPPOLITOV, Mikhail (NRC "Kurchatov Institute"); Dr. KHARLOV, Yury (NRC "Kurchatov Institute" - IHEP); Mr. KUSKOV, Vladislav (NRC "Kurchatov Institute"); Mr. LEBEDEV, Valery (NRC "Kurchatov Institute"); Mr. NIKULIN, Sergey (NRC "Kurchatov Institute"); Mr. NYANIN, Alexander (NRC "Kurchatov Institute"); Dr. PERESUNKO, Dmitry (NRC "Kurchatov Institute"); Mr. SIBIRYAK, Yury (NRC "Kurchatov Institute")

Presenter(s) : Mr. AVERYANOV, Dmitry (NRC "Kurchatov Institute")

Session Classification : Facilities and advanced detector technologies

Track Classification : Facilities and advanced detector technologies