

First tests of the ECAL detector at HADES experiment

Thursday, 18 April 2019 17:45 (15 minutes)

HADES is a large acceptance spectrometer operating at SIS18, GSI, Germany. It is aimed at exploration of QCD phase diagram at the ion beam energies of 1-2 AGeV in the region of high hadron densities. HADES setup includes a superconducting toroidal magnet, sets of drift chambers, ring-imaging Cherenkov detector, TOF systems and a new electromagnetic calorimeter (ECAL). The application of an electromagnetic calorimeter to HADES allows to study new reaction channels as the production of neutral mesons, neutral resonances in elementary and heavy-ion reactions. An additional advantage of ECAL is the improvement of the electron-to-pion separation at large momenta.

The detector is based on 978 lead glass Cherenkov modules, that are divided into 6 sectors and cover almost the full azimuthal angle. Currently only 4 sectors are assembled and installed. The rest 2 sectors will be added in the second half of 2019. Before the installation in the experimental area each module was calibrated with cosmic rays in vertical position in the Lab. For this purpose, two scintillator counters (up and down) were triggered in coincidence to select the cosmic muons passed along the module. After the installation in the experimental hall, the ECAL modules were tested again with cosmic rays using a self-trigger mode. In the end of 2018 the first ECAL beam data were collected at the test runs with Ar- and Ag-ion beams. Initial analysis of the first data from the electromagnetic calorimeter was performed. These beam data were used to adjust the signal delays of the modules, to check the HV settings and to make the preliminary amplitude calibration.

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Session Classification: High energy physics

Track Classification: High Energy Physics