

Dilepton production in the proton-proton reaction at 4.5 GeV with the HADES spectrometer

Thursday, 22 June 2023 15:25 (20 minutes)

The High Acceptance DiElectron Spectrometer (HADES) is a fixed target experiment at GSI, Darmstadt, Germany, with large geometrical acceptance and high efficiency, dedicated to the studies of heavy-ions, proton and pion induced reactions. In February 2022, proton-proton reactions at 4.5 GeV beam kinetic energy were measured and e^+e^- data was collected. The data allows to study the specific channels that produced dileptons, as baryonic resonance Dalitz decays ($\Delta/N^* \rightarrow pe^+e^-$) and vector meson decays ($\rho/\omega/\phi \rightarrow e^+e^-$). The measurement will also serve as a reference for in-medium effects observed in heavy-ion collisions at CBM and STAR Beam Energy Scan energies. In this contribution, the strategy for the identification of correlated electron-positron pairs and the rejection of combinatorial background will be discussed. The signal to background ratio in the vector meson region is larger than 10 and ω and ϕ peaks are clearly visible. In addition, e^+e^- pairs are reconstructed in the high invariant mass region ($M_{e^+e^-} > 1020 \text{ MeV}/c^2$).

Collaboration

HADES

Primary author: ABOU YASSINE, Rayane (IJCLAB)

Presenter: ABOU YASSINE, Rayane (IJCLAB)

Session Classification: Parallel session B1