

Measurement of the quasi free $np \rightarrow np\pi^+\pi^-$ and $np \rightarrow pp\pi^-\pi^0$ reactions at 1.25 GeV with HADES

Friday, 30 May 2014 17:30 (0:20)

Collaboration

HADES

Abstract content

We present the results of two-pion production in tagged quasi-free np collisions at a proton incident beam energy of 1.25 GeV measured with the High-Acceptance Di-Electron Spectrometer (HADES) installed at GSI. The specific acceptance of HADES allowed for the first time to obtain high-precision data on $\pi^+\pi^-$ and $\pi^-\pi^0$ production in np collisions in a region corresponding to large transverse momenta of the secondary particles. The obtained differential cross section data provide strong constraints on the production mechanisms and on the various baryon resonance contributions ($\Delta\Delta$, $N(1440)$, $N(1520)$, $\Delta(1600)$). The invariant mass and angular distributions from the $np \rightarrow np\pi^+\pi^-$ and $np \rightarrow pp\pi^-\pi^0$ reactions are compared with different theoretical model predictions.

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Session Classification : Parallel Session A2