

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

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## 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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