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## Pion induced reaction with carbon and polyethylene targets obtained by HADES-GSI in 2014

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In the summer of 2014, HADES conducted measurements with secondary pion-beam using different targets. The program is devoted to measure dilepton radiation from baryonic resonances. In particular we investigated a sub-threshold coupling of rho to baryonic resonances in the second resonance region, specially  $N(1520)$ . Most of the beam time was dedicated to measurement of  $e^+e^-$  production from PolyEthylene target at pion beam momentum of  $690 \text{ MeV}/c$ . Combining these data with carbon data it is possible to extract pion-proton interactions. Therefore it was possible to measure at the same time exclusive  $\pi^-p \rightarrow e^+e^-$  and inclusive  $e^+e^-$  production. The normalization of spectra has been done using elastic scattering of pion on proton. The identification of  $e^+e^-$  is was performed through appropriate cuts on time-of-flight, energy loss, shower signal and RICH (Ring Imaging Cherenkov) observables. Exclusive and inclusive invariant mass spectra is compared with the different channel contributions simulated with a dedicated Monte Carlo simulation tool for hadronic physics (PLUTO). Using missing mass cuts it was possible to identified the events from the reaction  $\pi^-p \rightarrow ne^+e^-$  which shows that the  $e^+e^-$  yield of invariant mass above  $250 \text{ MeV}/c^2$  is consisted with  $N(1520) \rightarrow n\rho \rightarrow ne^+e^-$ . Models associate the excess of dilepton measured in heavy ions reactions with the excitation and decay of baryonic resonances of dileptons via intermediate  $\rho$  meson

### Content type

Experiment

### Collaboration

HADES

### Centralised submission by Collaboration

Presenter name already specified

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