Study of the NNη' production with COSY-11

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Motivation

- η' production cross-sections
- pp FSI
- Nη' interaction
- η' mesic nuclei
COSY-11 setup

cluster target

scintillators

drift chambers
Principle of measurement

\[ p \, p \rightarrow p \, p \, \eta' \]

\( \eta' \) meson

Determination of the total width of the \( \eta' \) meson

Detector system upgrade

![Graph showing p_{beam} [GeV/c] vs counts]

![Image of detector component]
Detector system upgrade

- CLUSTER BEAM DUMP
- pressure measurement point
- diagnosis unit
- PROTON BEAM
- NOZZLE \( \phi 16 \mu \text{m} \)
- \( \text{H}_2 \) target beam

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Luminosity determination

Comparison with differential cross-section for elastically scattered pp from EDDA collaboration

angle CM 41deg
points
EDDA data
pp→pp
line
2nd order polynomial fit

angle CM 59deg
Luminosity determination

Comparison with differential cross-section for elastically scattered pp from EDDA collaboration

Luminosity determination

Q=1.4 MeV

Q=1.7 MeV

Q=2.8 MeV

Q=4.8 MeV

EDDA

COSY-11

pp→pp
Background subtraction

Q = 0.8 MeV data
Q = 4.8 MeV data shifted and normalized to Q = 0.8 MeV data
η' counting

Q=0.8 MeV

[Graphs showing missing mass distribution with events/100keV on the y-axis and missing mass [GeV/c^2] on the x-axis.]
η' counting

Q=1.4 MeV

![Graphs showing missing mass distributions for events/100keV vs. missing mass in GeV/c^2.](image)
η' counting

Q=1.7 MeV
η' counting

Q=2.8 MeV

![Graph showing missing mass vs. events/100keV](image)

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η' counting

Q=4.8 MeV
Result and plans

DATA
COSY-11
SPESIII
DISTO
COSY-11 preliminary

THEORY (pp FSI only)

based on Cini-Fubini-Stanghellini
Nucl. Phys. A 278 (1977) 506

B. L. Druzhinin, A. E. Kudryavtsev,
V. E. Tarasov,
Thank you for attention.