Deuteron breakup at zero angle in the Coulomb nuclear field

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High precision measurements of cross-sections in A(d,p)X reactions at small internal proton momenta

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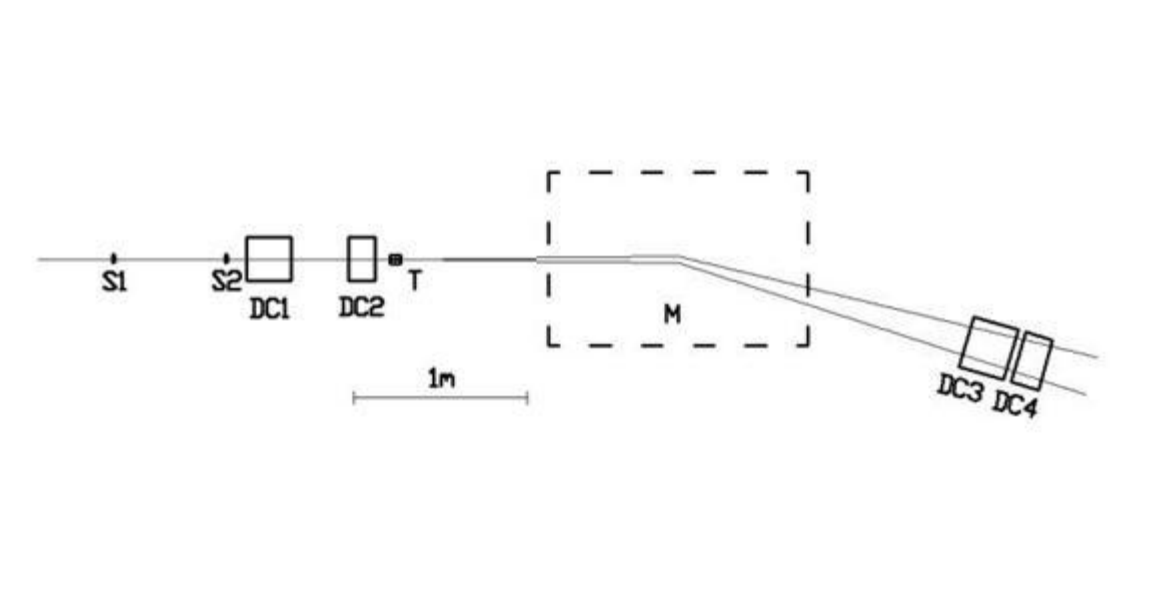
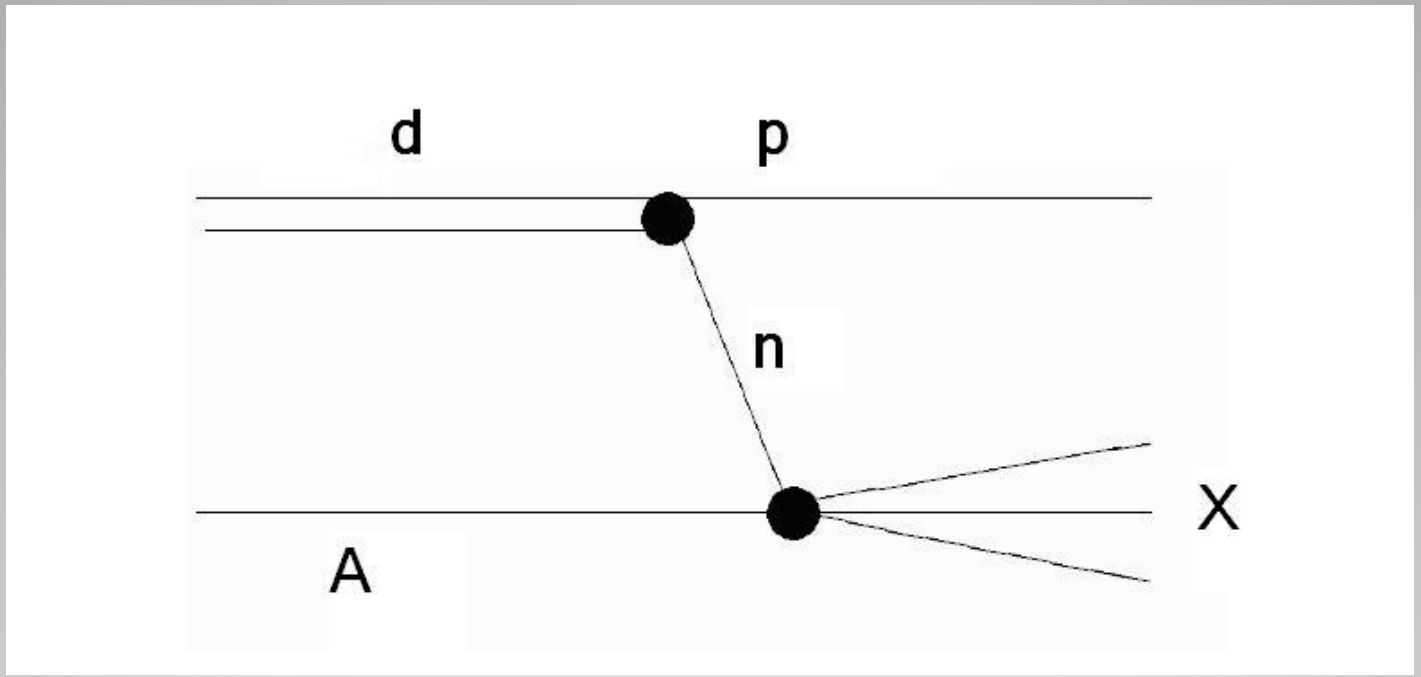


DCi – drift chambers

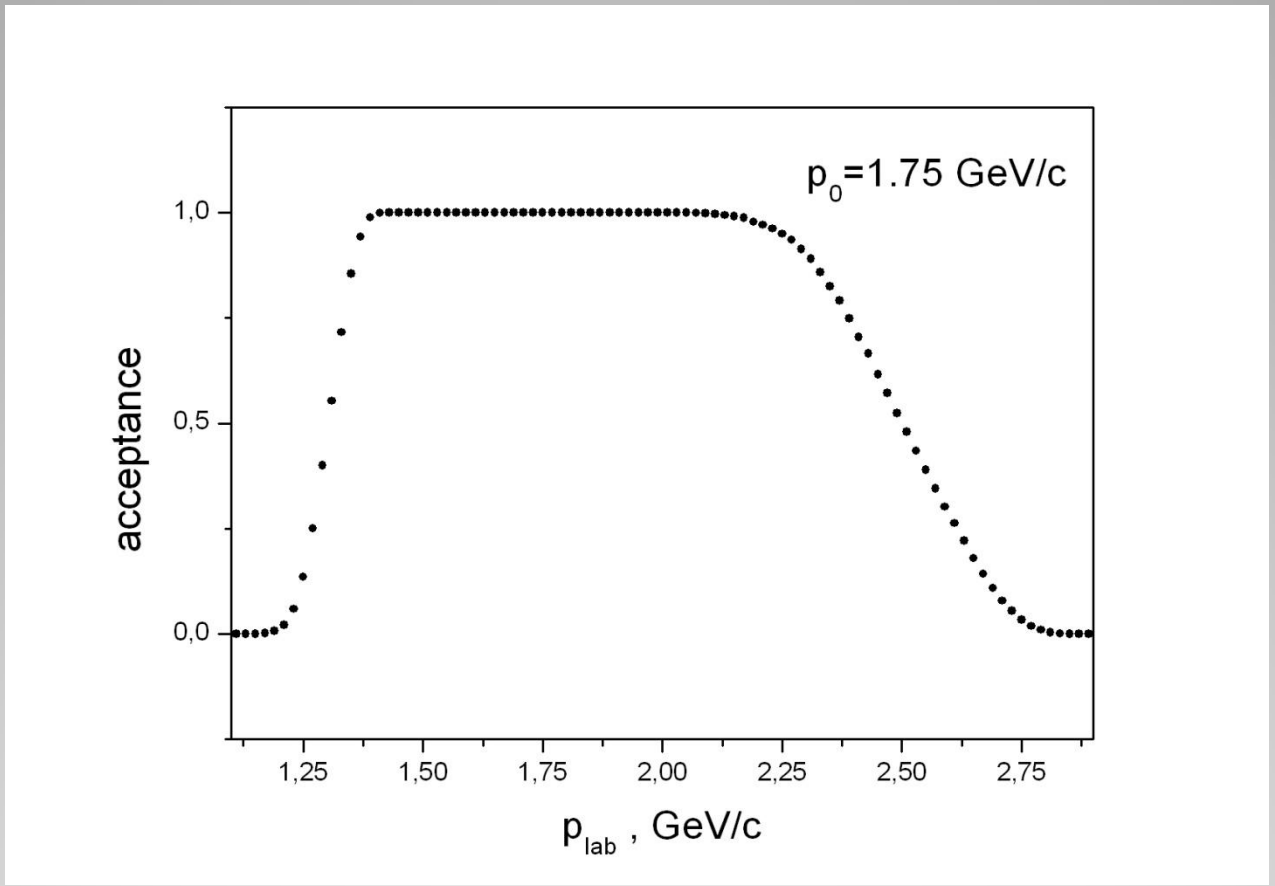
- V.G. Ableev et al.,
- Nucl.Phys. A393 (1983) 491.

- V.G.~Ableev et al.,
- JINR Rapid. Com., 1[52]-92 (1992) 10.

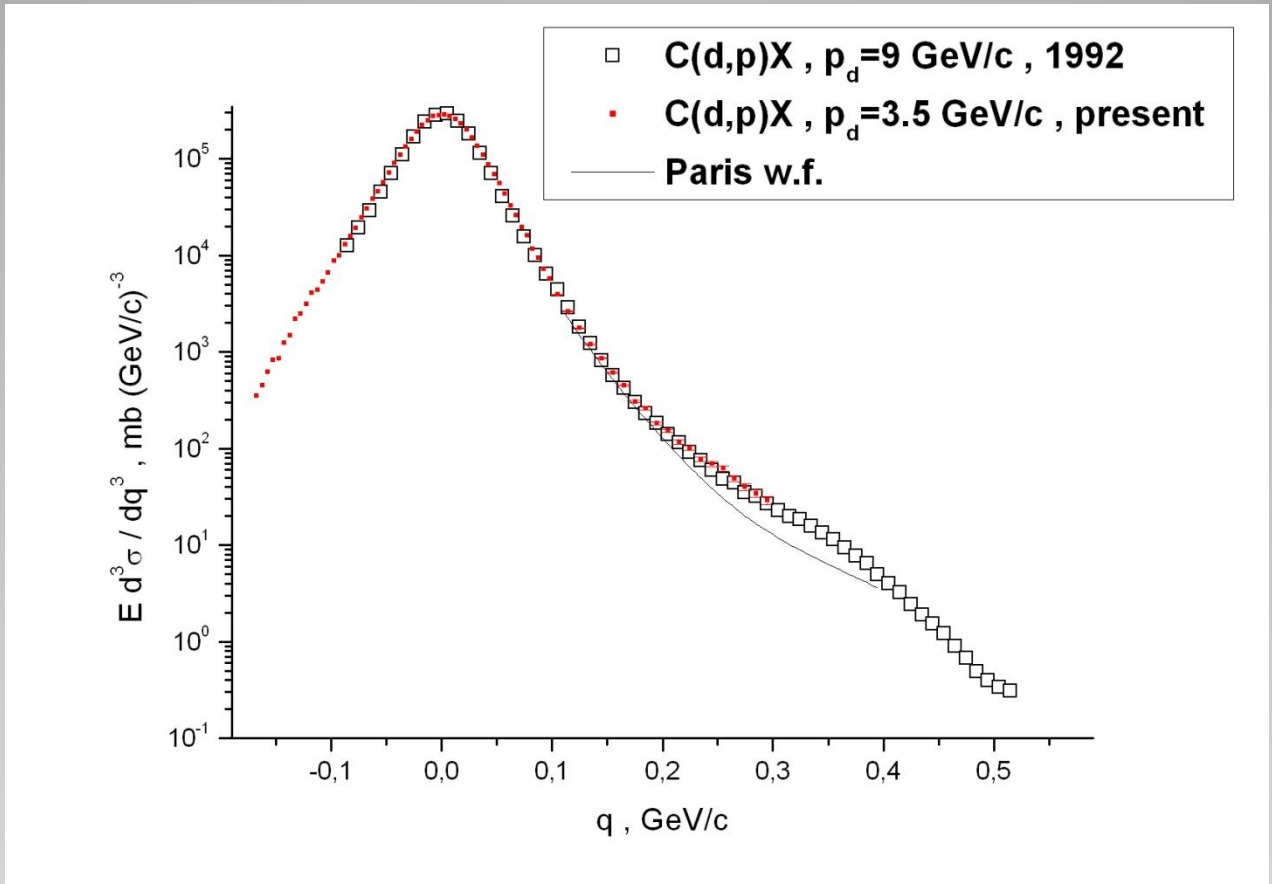


Impulse Approximatin graph

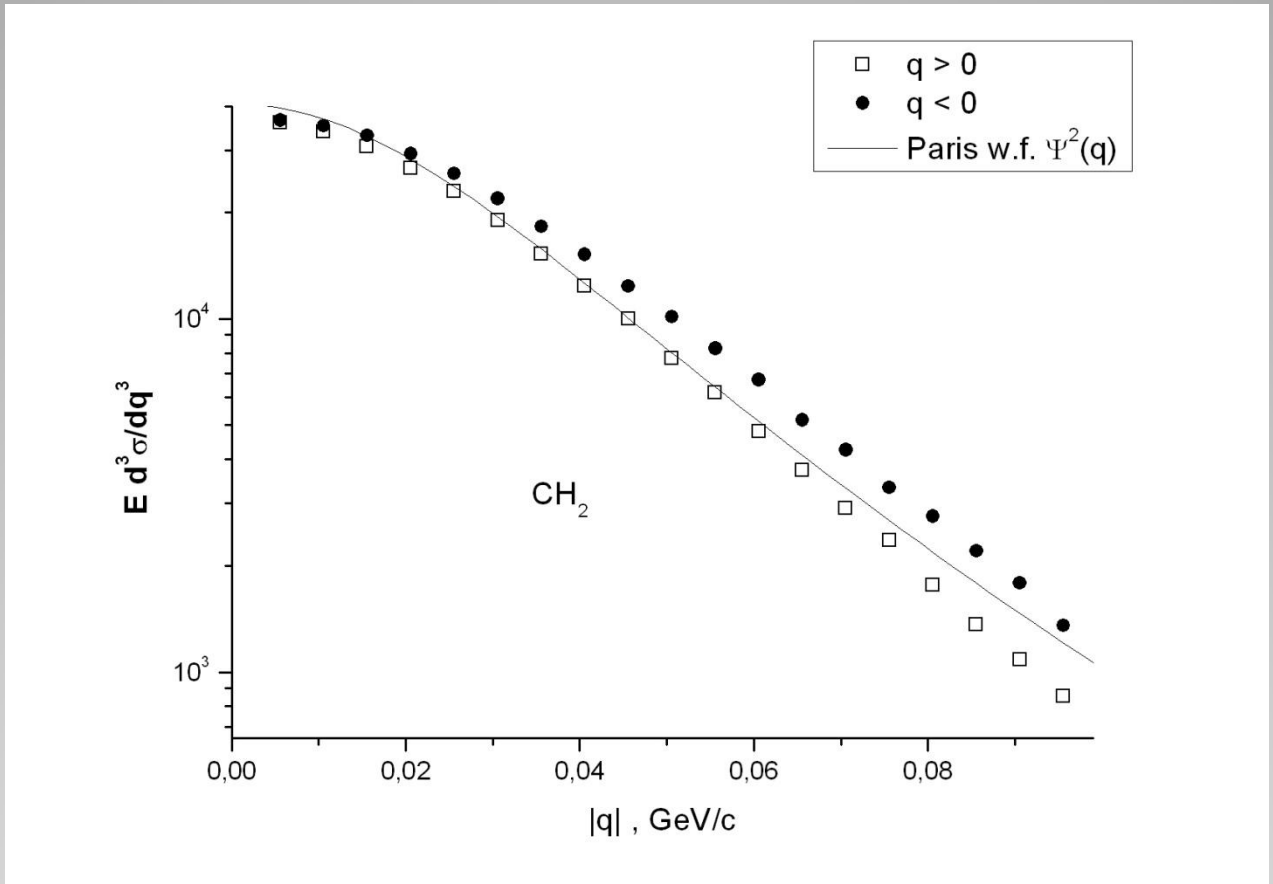
bottom vertex – total nA cross-section



Eff > 0.9 at $-0.21 < (p-p_0)/p_0 < 0.27$



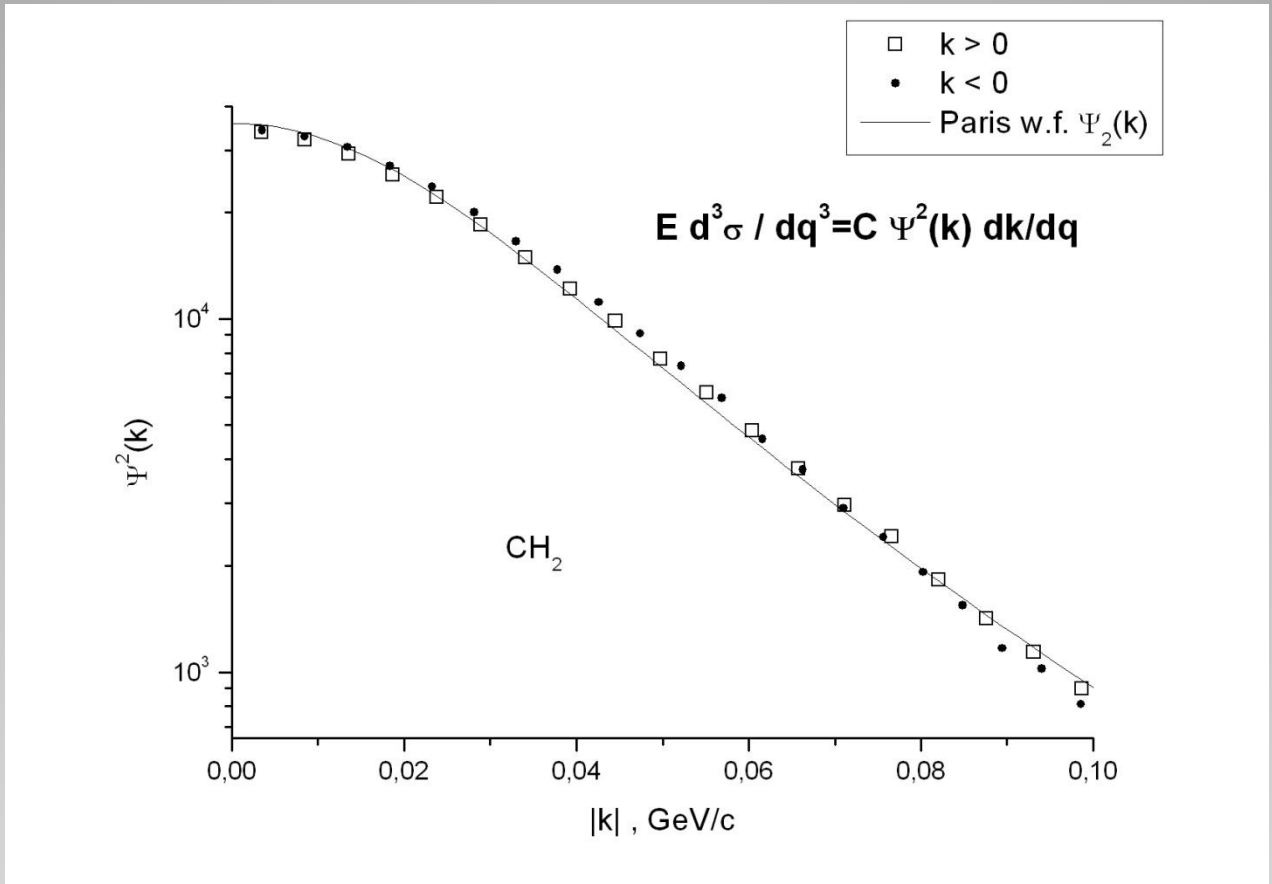
q_L-spectrum for d -> p +X



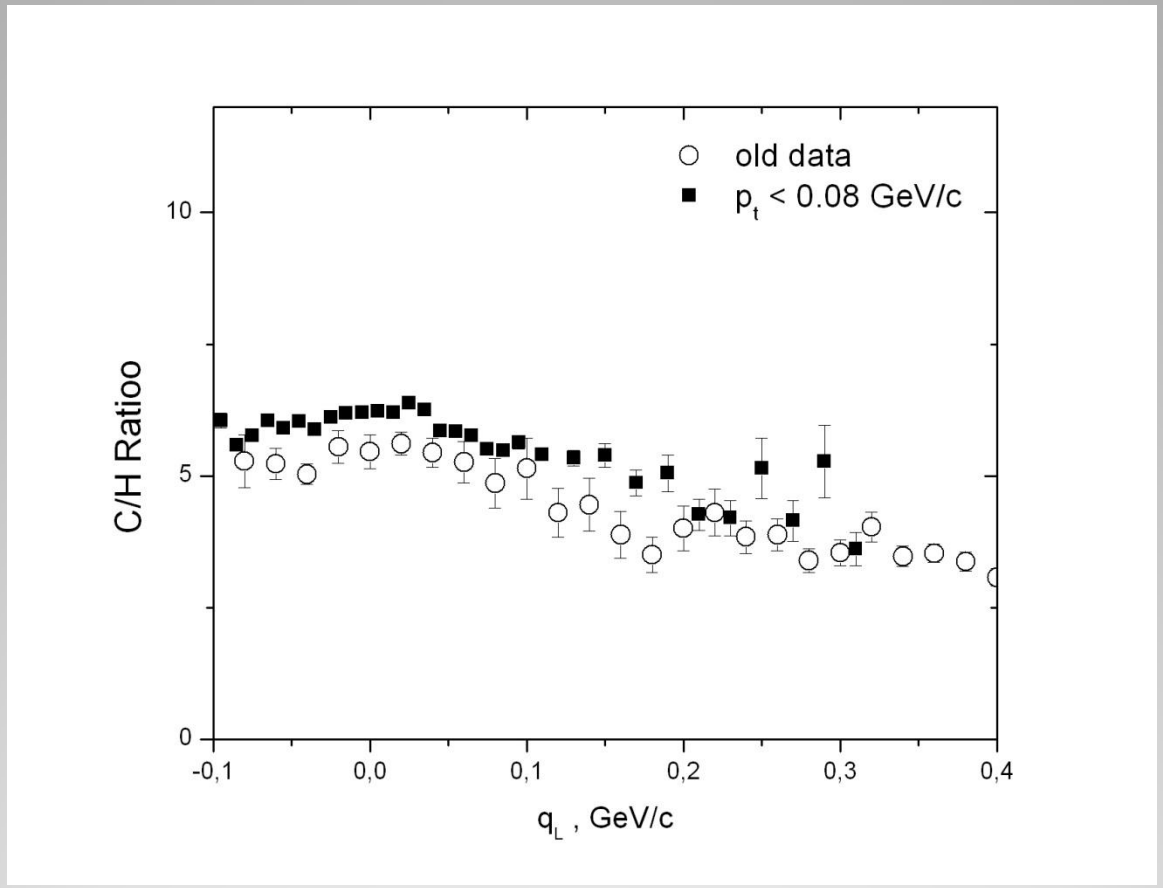
-q- vs q-spectra for d –> p + X

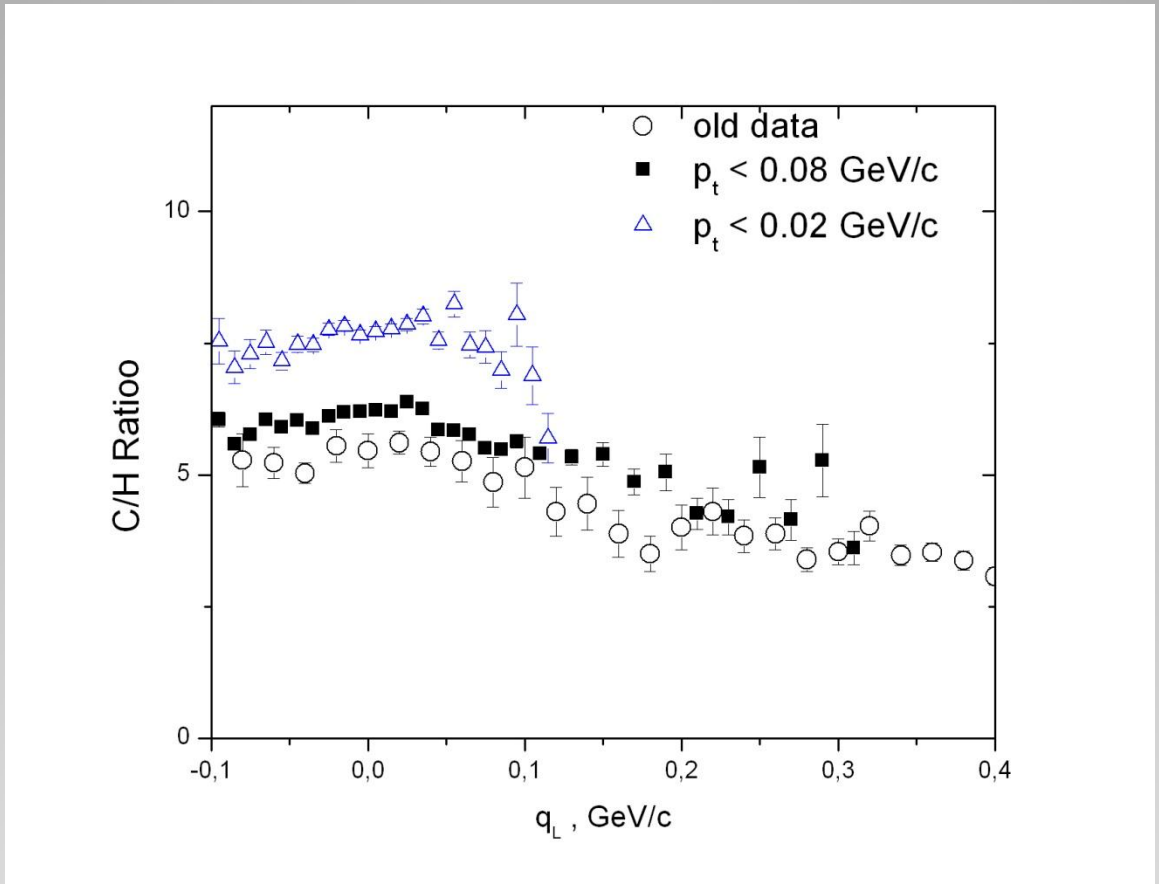
$$
\begin{aligned}
\alpha &= \frac{\sqrt{m_s^2 + q^2} + q_{\|}}{m_A} \\
M_{sf}^2 &= \frac{q_\perp^2 + m_s^2(1-\alpha) + m_f^2\alpha}{\alpha(1-\alpha)} \\
k_{\|} &= (\alpha - \frac{1}{2})M_{sf} - \frac{m_s^2 - m_f^2}{2M_{sf}} \\
k_\perp &= q_\perp \\
k &= \sqrt{k_\perp^2 + k_{\|}^2}
\end{aligned}
$$

Transform q -> k

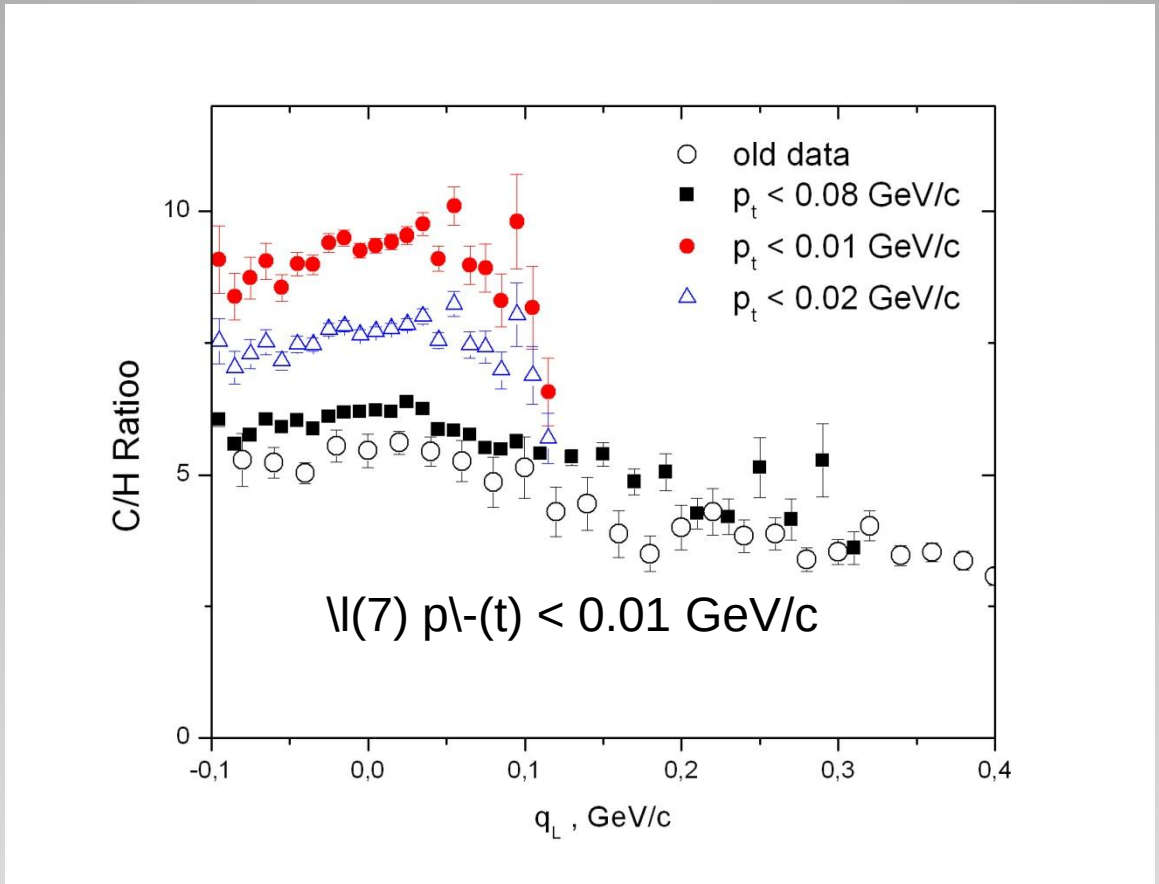


-k- vs k-spectra for d -> p + X

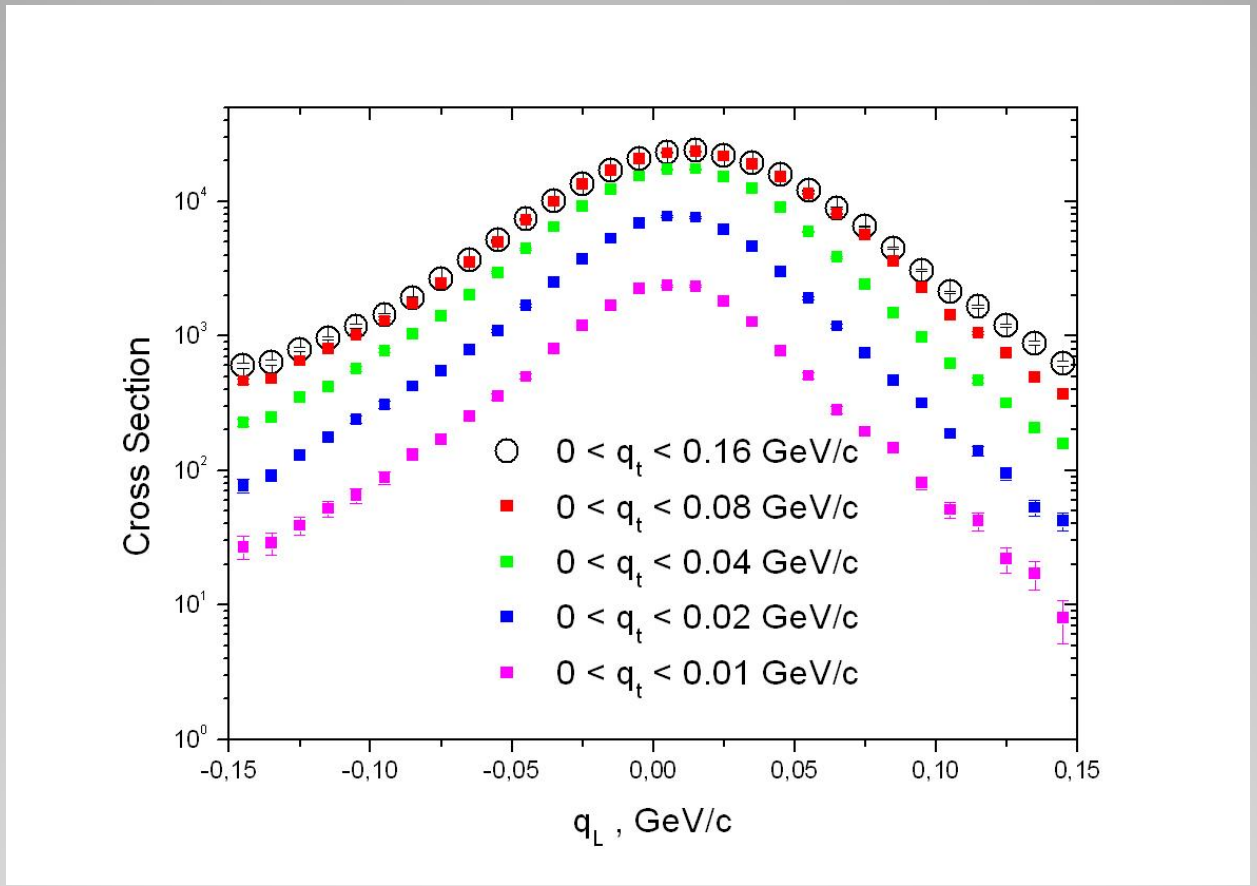

old data
p_t < 0.08 GeV/c
C/H Ratioo
10
5
0
-0,1
0,0
0,1
0,2
0,3
0,4
q_L , GeV/c



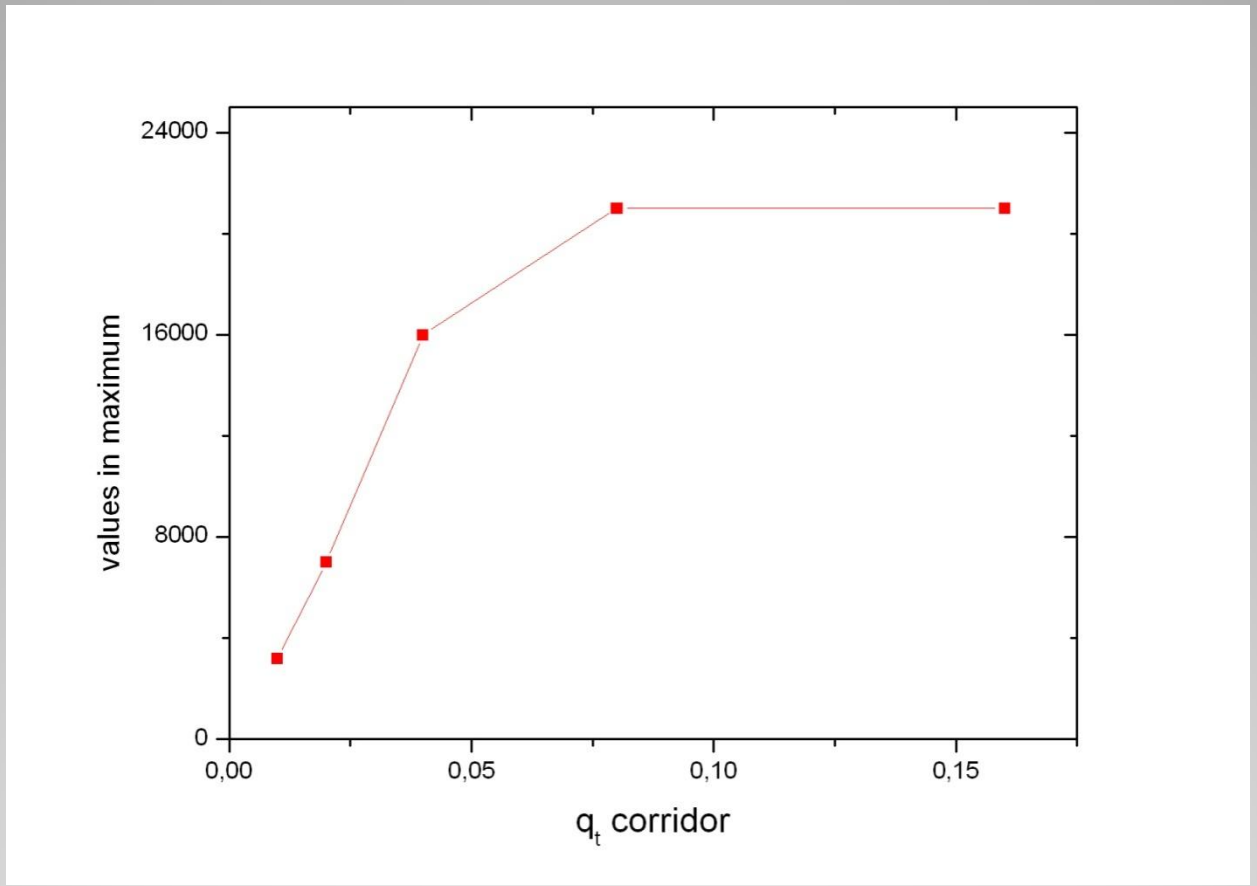
dC/dH-ratio for different corrdors on q_t



dC/dH-ratio for different corrdors on q_t



q_L-spectra on C-target for different corridors on q_t



Maxima of previous spectra for different corridors on q_t

Conclusions

- 1. Breakup cross-sections show energy independence in GeV region.
- 2. Light front variable is preferable for comparison experiment with theory.
- 3. Deuteron breakup in the nuclei Coulomb field is revealed.
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