

28 January 2025

Contribution of Italian
INFN groups to SIDIS

ePIC SIDIS
Meeting

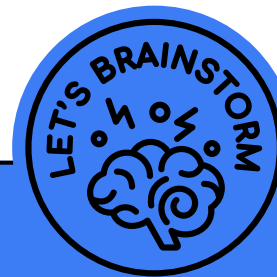
Outlook

Suggerimento: usa i link per passare a una pagina diversa della presentazione.

Istruzioni: evidenzia il testo, clicca sul simbolo del link sulla barra degli strumenti e seleziona la pagina della presentazione che vuoi collegare.

PRESENTATION

Introduction



Topics of interest

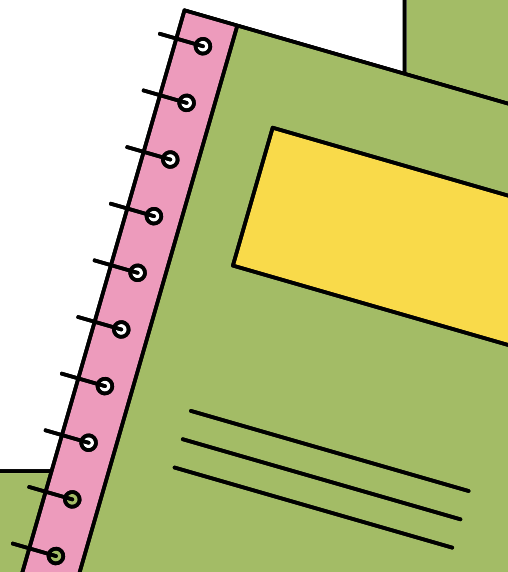


Presentation of the
groups

DO IT TOGETHER



Time for discussion



WHY SIDIS?

1 We are already involved in the dRICH project: SIDIS process of interest for evaluating dRich design performances

2 Close collaboration with Theory groups in Pavia and Torino working on TMDs

3 Experience and interest in nucleon structure studies

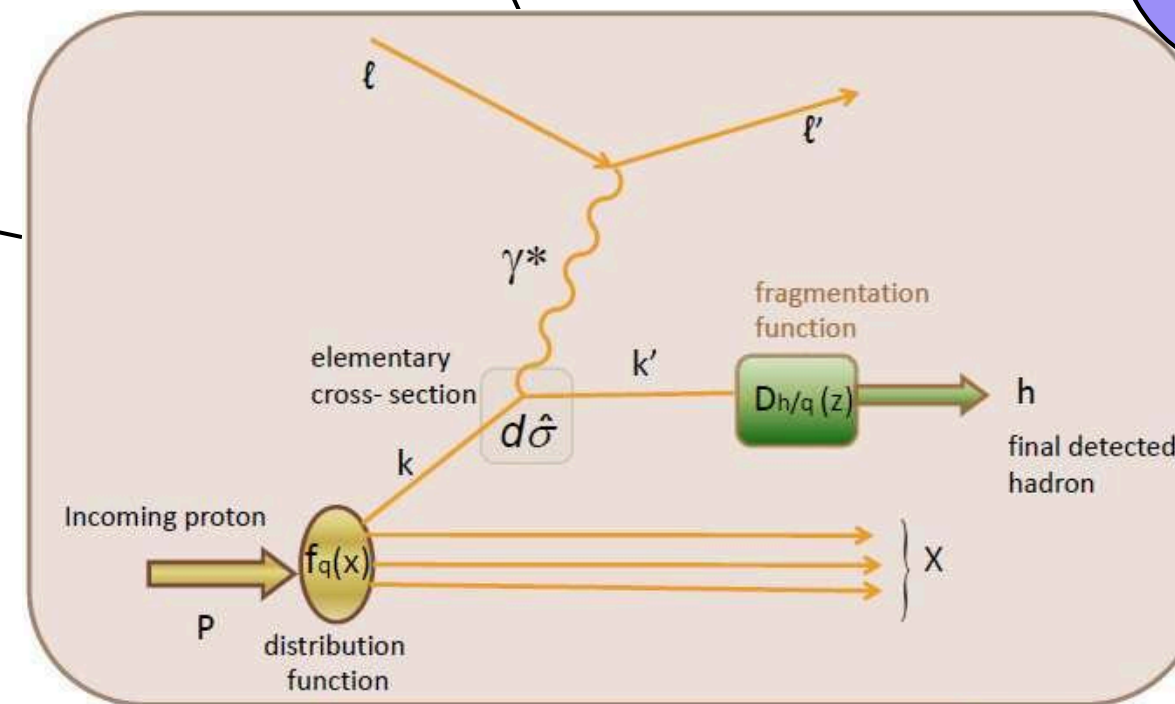
Torna all'Indice

Experience in Spin Physics and Nucleon Structure gained at CLAS at JLAB and COMPASS at CERN

Collaboration with Theory groups for impact studies

Pavia: unpolarized and polarized TMDs

Torino: polarized TMDs

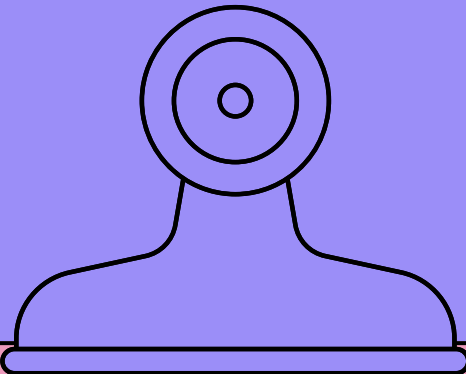
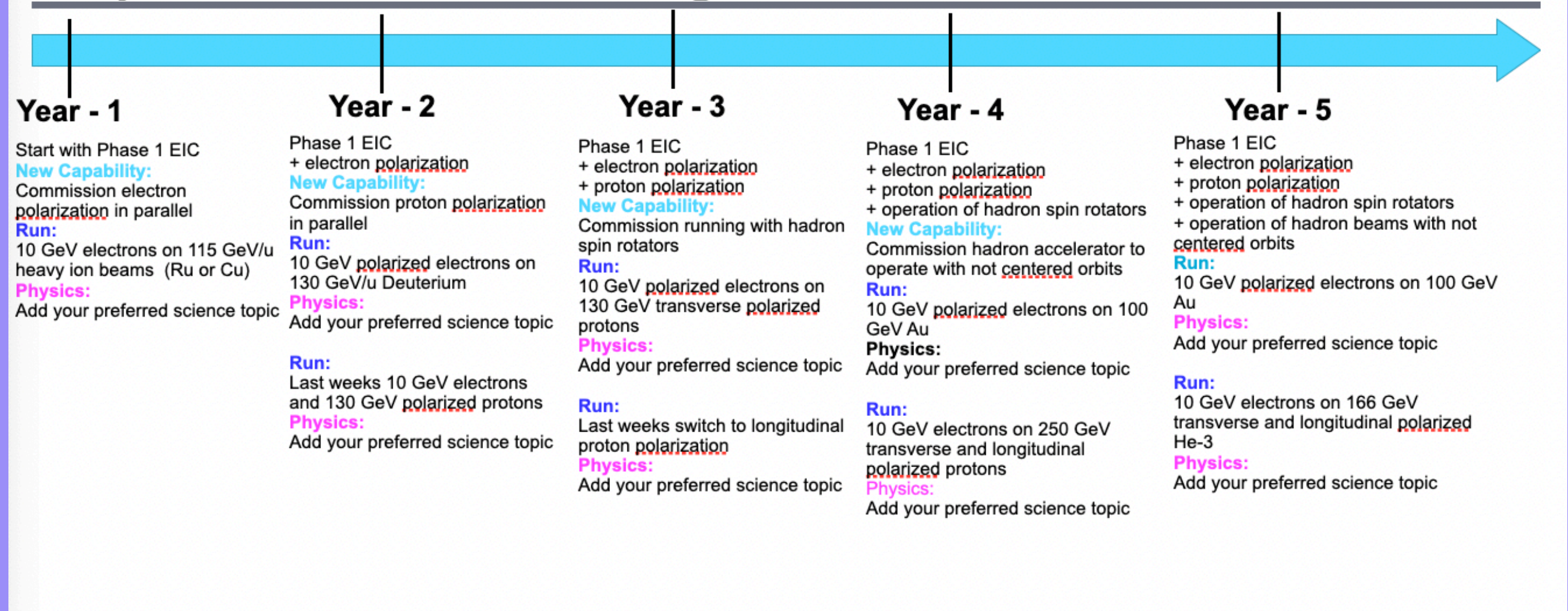


Sinergy with dRICH project

Example: Study of relevant kinematic distributions, acceptance studies, PID

PRESENTATION

Proposal for EIC Science Program in the First Years



Early science program

from the slides of Elke at the ePIC Collaboration Meeting in Frascati last week



Torna all'Indice

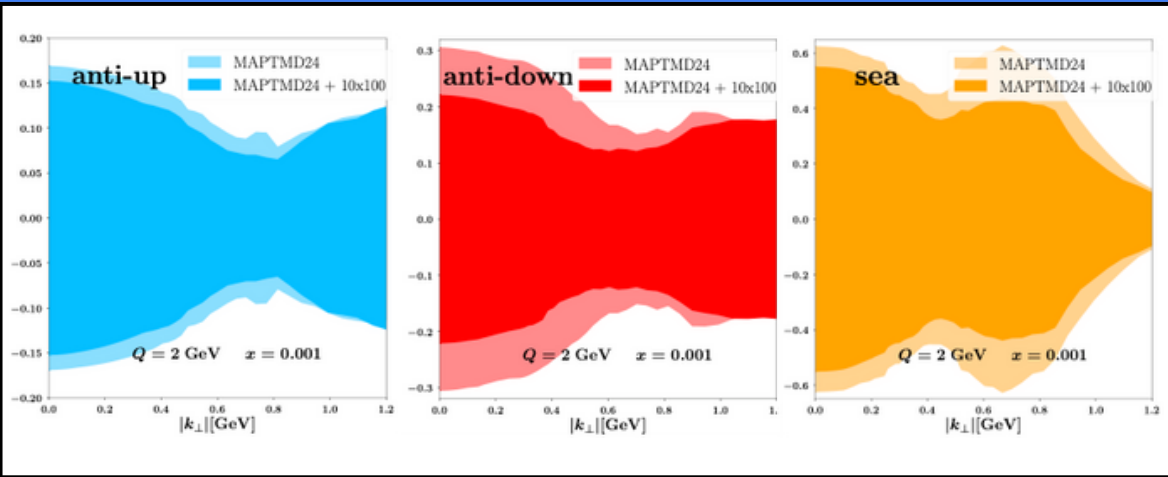
Topics of interest

Fai clic con il tasto destro sullo sfondo della diapositiva, o sull'anteprima sotto, per **espandere** questa pagina in una **lavagna** e ottenere più spazio.

1

1
Unpolarized TMDs (e+p/D) with identified pions/kaons

Impact studies already ongoing on unpolarized TMDs (e+p) with identified pions, by Pavia group using pseudo-data provided by Gregory Matousek (Duke)

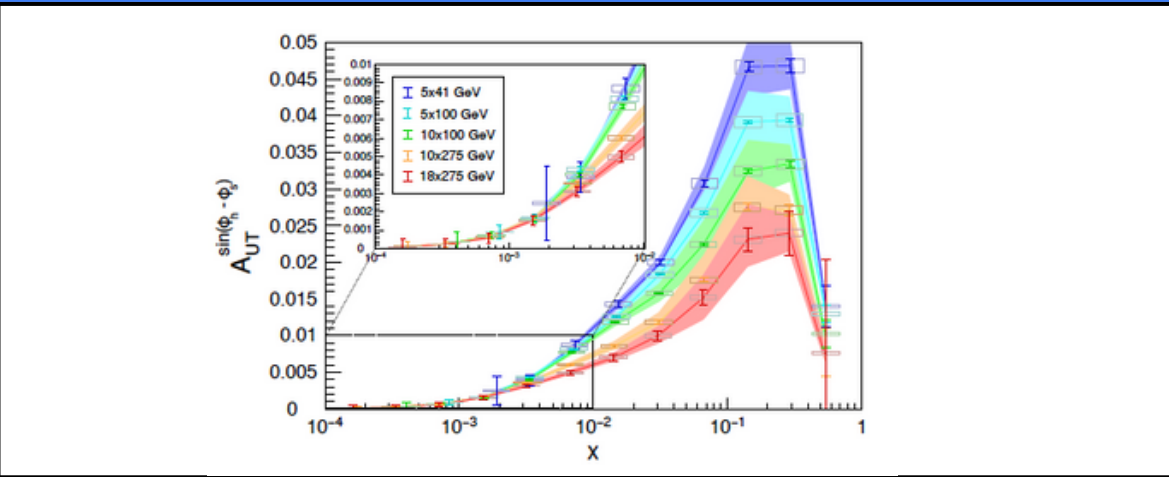


Results by L. Rossi

MAPTMD24 2031
EIC # pts. lumi [fb⁻¹]
10x100 1611 5

2
Sivers (e+p/D) with identified pions/kaons

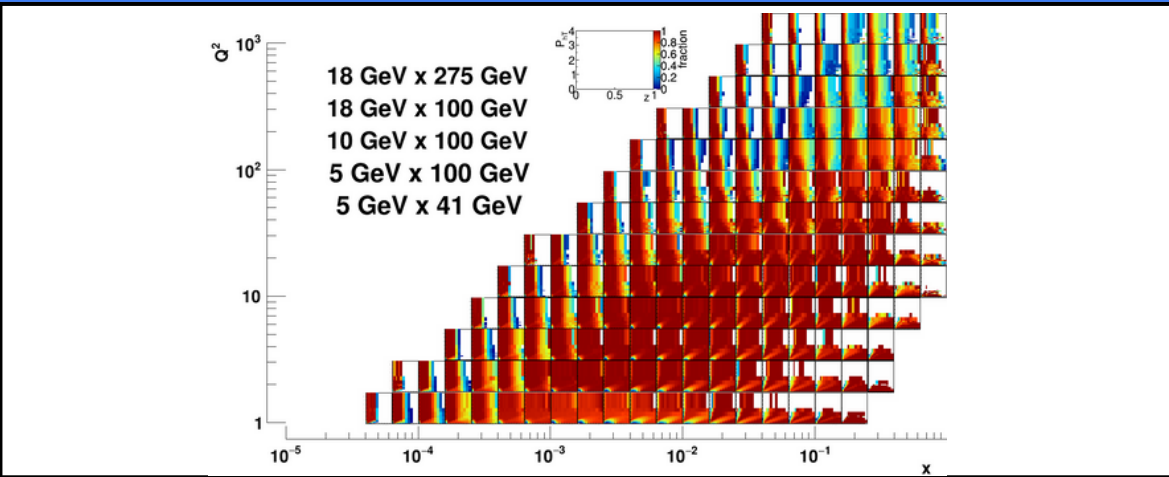
Impact studies started on Sivers (e+p) with identified pions, by Torino group using pseudo-data provided by Gregory Matousek (Duke)



Athena Detector
Proposal

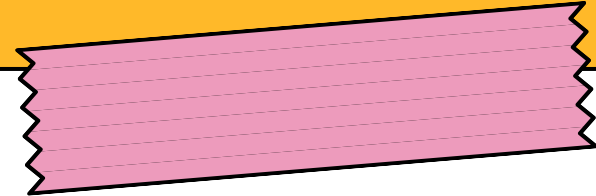
Projected Sivers asymmetries extracted from ATHENA pseudodata compared to projections from the Pavia extraction for charged pions.

3
Studies of relevant kynematic distributions, reconstruction efficiency, PID, radiative corrections



Yellow Report

PID acceptance fractions as a function of pion fractional energy z and transverse momentum PhT in bins of x and Q_2 .



Who?

[Torna all'Indice](#)

Ferrara

Marco Contalbrigo, Staff Researcher

Lorenzo Polizzi, PhD

Interest: mainly topic 3, synergy with dRICH studies

Pavia

Gianluigi Boca, Staff Researcher

Susanna Costanza, Associate Professor

Nicolò Valle, Postdoc

Interest: mainly topic 1

Theory group: Filippo Delcarro (Postdoc), Marco Radici (Staff Researcher)

Torino

Michela Chiosso, Associate Professor

Davide Giordano, Post Doc

Interest: mainly topic 2, 3

Theory group: Mariaelena Boglione (Full Professor), Emanuele Nocera (Associate Professor), Andrea Signori (Associate Professor)

Salerno

Annalisa De Caro, Associate Professor

Cristina Ripoli, Postdoc

Interest: mainly topic 1

Laboratori Nazionali del Sud

Dario Lattuada, Tenure Track Researcher

one Postdoc

Interest:

Trieste

Andrea Bressan, Associate Professor

Interest: mainly topic 1*, 2, 3

*also with unidentified hadrons

First steps

Become familiar with ePIC simulation and reconstruction software



Time for discussion

Torna all'Indice

One additional information: we have an internal INFN milestone for September 2025 on “Performance studies of PID detectors in the extraction of TMDs”

Are there other groups, except Duke, already involved in these tasks?

Which kind of deliverables?

Is there a list of priorities?