

# **Deep Processes Working Group Report**

CLAS Collaboration Meeting  
Jefferson Lab, 15<sup>th</sup> November 2018

# Publications:

CLAS 2017-09

Measurement of Unpolarized Cross Sections and Polarized Cross Section Differences for Deeply Virtual Compton Scattering (DVCS) on the proton at the Jefferson Laboratory with CLAS, at  $0.1 < x_B < 0.58$ ,  $1.0 < Q^2 < 4.8 \text{ GeV}^2$ , and  $0.09 < -t < 2.0 \text{ GeV}^2$ ,

**H. Saylor**, published on Phys. Rev. C

CLAS 2017-13

Measurement of the  $Q^2$  dependence of the deuteron spin structure function  $g_1$  at its moments at  $0.02 < Q^2 < 0.7 \text{ GeV}^2$  with CLAS,

**K.P. Adhikari**, published on Phys. Rev. Lett.

CLAS 2018-5

Measurement of the beam spin asymmetry of the  $ep \rightarrow e' p \eta$  in the deep-inelastic regime with CLAS,

**B. Zhao**, submitted to Phys. Lett. B

# Ad Hoc Reviews

Analysis	Data	Lead Author	In progress
Exploring the structure of the proton via semi-inclusive pion electroproduction	<b>e1f</b>	<b>N. Harrison</b> <b>K. Joo</b>	1 <sup>st</sup> round done on Sep 18

# Analysis Reviews

Analysis	Data	Author	In progress
First Observations of Beam Spin Asymmetries for K+	<b>e1f</b>	<b>D. Riser</b>	1 <sup>st</sup> round done on Sep 18
Extraction of $A_{LU}^{\sin\phi}$ moments from hard exclusive $\pi^+$ off the unpolarized hydrogen target in a wide range of kinematics	<b>e1f</b>	<b>S. Diehl</b>	Ongoing
Beam asymmetries in exclusive $\pi^+$ electro production for $W > 1.7$ GeV from e16	<b>e16</b>	<b>P. Bosted</b> <b>K. Park</b>	Analysis under revision

# Analysis Reviews

Analysis	Data	Author	In progress
Exclusive electro-production of the $f_0(980)$ and $f_2(1270)$ on the proton with CLAS	<b>e1f</b>	<b>B. Garillon</b> <b>S. Niccolai</b>	Brice busy with other project
Di-hadron beam spin asymmetry in SIDIS electro production	<b>eg1-dvcs</b>	<b>S. Pisano</b>	Silvia busy with other project
Deep-virtual production of the $\rho^+$ meson off the proton	<b>e1-dvcs</b>	<b>A. Fradi</b>	Ahmed busy with other projects. Slow progress
Semi-inclusive pion production	<b>e16</b>	<b>M. Osipenko</b>	Working on a better alignment
Time-like Compton scattering	<b>g12</b>	<b>I. Abayrak</b>	Last record 2015

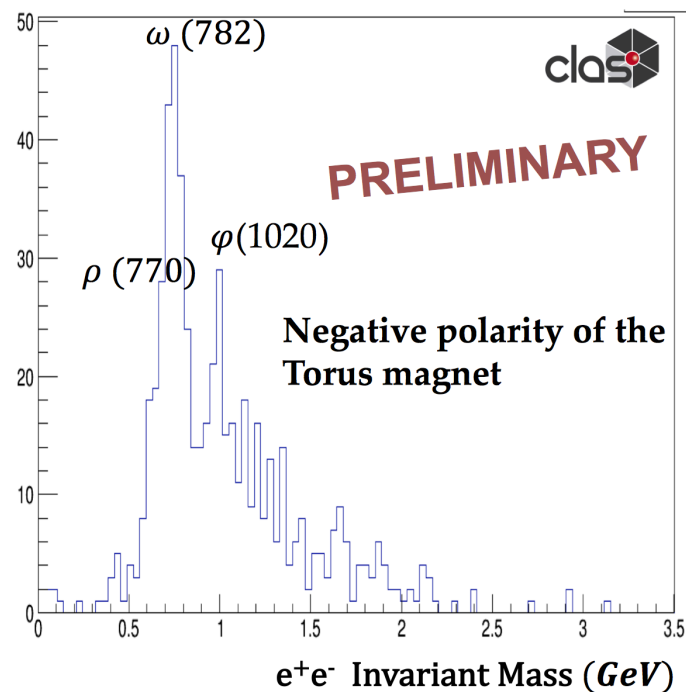
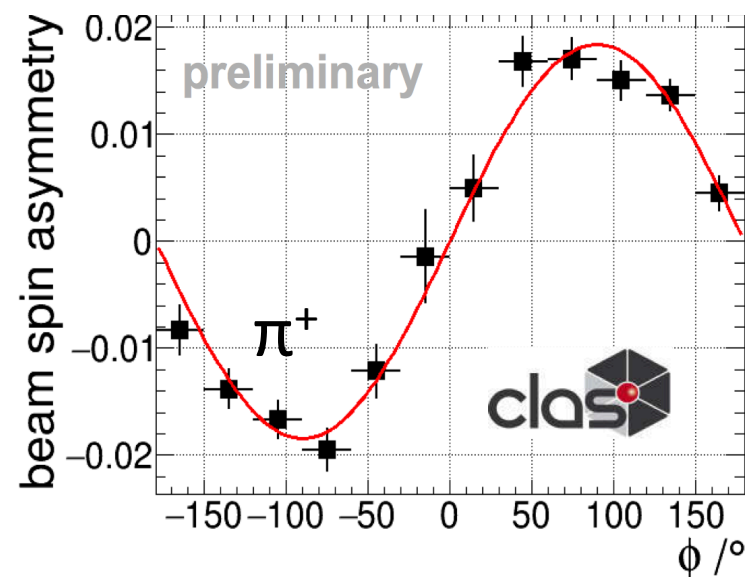
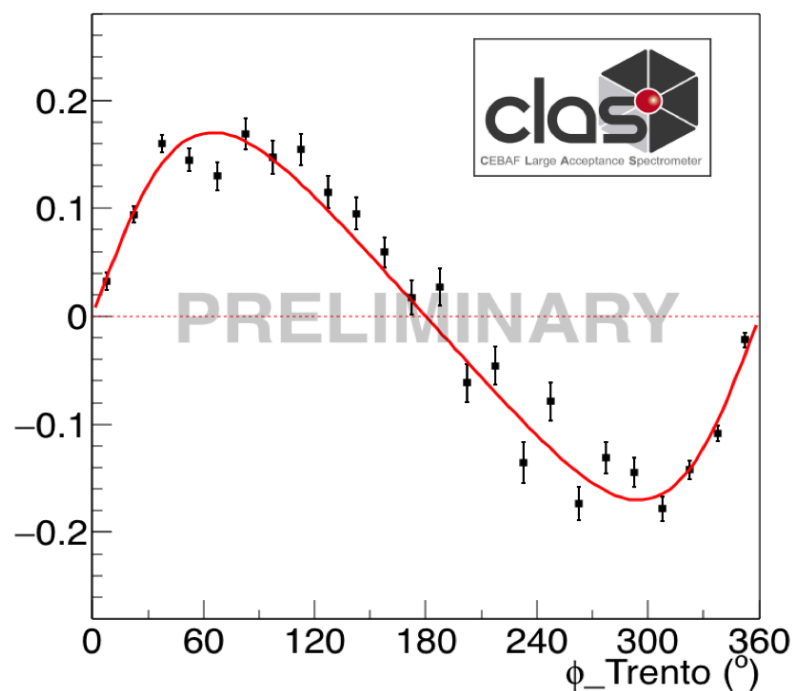
# CAA Reviews

Analysis	Data	Author	In progress
Observation of transverse polarization of Lambda hyperons in the current fragmentation from unpolarized targets	<b>RGA</b>	<b>A. Vossen</b>	1 <sup>st</sup> round done on Oct 18
Boer-Mulders effect and helicity dependent fragmentation functions in hadron pair production off unpolarized targets	<b>RGA</b>	<b>A. Vossen</b>	1 <sup>st</sup> round done on Oct 18

## DNP Conference:

Good representation of DPWG studies and CLAS12 potentiality

**Thanks to the DNP analyzers and DPWG for the successful effort**



**Analysis Notes available at**

<https://clas12-docdb.jlab.org/cgi-bin/DocDB/private/DisplayMeeting?conferenceid=9>

# SIDIS $\pi^0$ multiplicity: A mini analysis note

Giovanni Angelini

*The George Washington University, Washington DC (USA)*

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## Abstract

In this document the  $\pi^0$  multiplicity in Semi-Inclusive Deep Inelastic scattering (SIDIS) is obtained as a function of the  $z$  variable by using the CLAS spectrometer at JLab.

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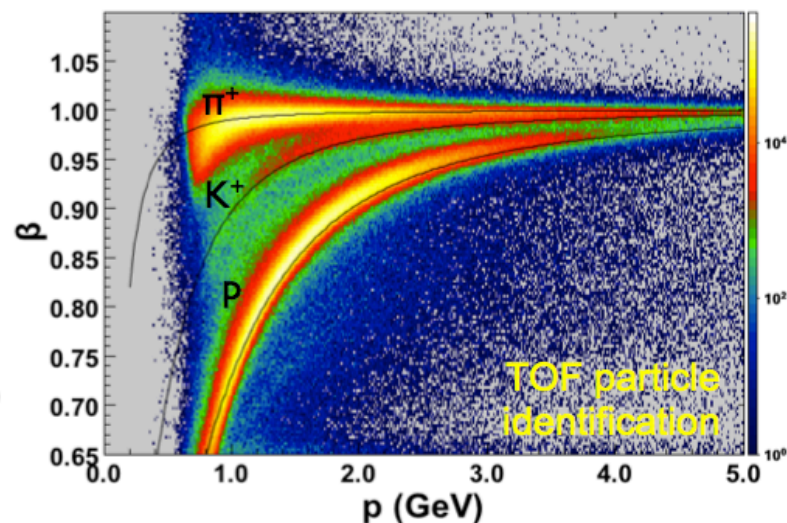
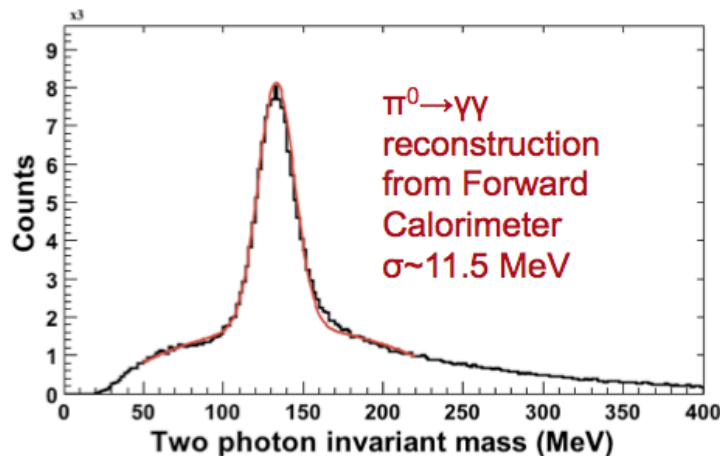
**DNPWG Release Meetings in collaboration with FEAR Committee**

<https://clas12-docdb.jlab.org/cgi-bin/DocDB/private/DisplayMeeting?conferenceid=9>

DNP Template available at

<https://www.jlab.org/Hall-B/secure/claschair/clas12slidesandplots/>

## Performance plots (from run 4013)



DNP Talks available at

<https://clas12-docdb.jlab.org/cgi-bin/DocDB/private/DisplayMeeting?conferenceid=9>

<https://clas12-docdb.jlab.org/cgi-bin/DocDB/private/DisplayMeeting?conferenceid=2>

Start	Title	Author(s)	Topic(s)	File(s)	Length	Edit
08:30	<a href="#">Down quark polarisation with CLAS12</a>	<a href="#">Tomy Forest</a>	<a href="#">Physics</a>	<a href="#">DNP-2018_V1.pdf</a>	00:00	<a href="#">Edit</a>
08:30	<a href="#">The BoNuS12 experiment</a>	<a href="#">Jiwan Poudel</a>	<a href="#">Physics</a> <a href="#">Experiment</a>	<a href="#">DNP_Hawaii_2018.pdf</a>	00:00	<a href="#">Edit</a>
08:30	<a href="#">SIDIS K+ Beam Spin Asymmetry with CLAS</a>	<a href="#">David Rise</a>	<a href="#">Physics</a>	<a href="#">2018_APS_DNP.pdf</a>	00:00	<a href="#">Edit</a>
08:30	DVMP at CLAS	<a href="#">Valery Kubarovsky</a>	<a href="#">Physics</a>	None	00:00	<a href="#">Edit</a>

# Organized effort for Next Steps

List of ongoing or planned (short term) analyses

- More than one run-group

- PHD topics to be communicate to CCC

Envision two groups (people) on the same topic or channel, with different observables

- Faster progresses

- Cross-check of basic steps

- Knowledge sharing and preservation

Common analysis environment:

- Common tools provide standards (no review needed)

- New tools can become standard by approval (analysis review like)

- Common MC productions



# DPWG Meeting, 15<sup>th</sup> November 2018

DPWG sessions:

CLAS6 and CLAS12 studies and physics analyses

MC generators and productions

Common WG session (14:30 – 18:00):

DNP experience

Plan toward 1<sup>st</sup> publication

Common Procedures