NPS Collaboration Meeting

JLab, Newport News, VA

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T. Horn



NPS Collaboration



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Outline



- Scientific program
- NPS status
- Goals of this meeting



Agenda

Welcome! Thank you for attending!

Overview Scientific Program

• 5 experiments approved by PAC (40, 42) to date

 \rightarrow See talk by C. Hyde

- E12-13-007 Measurement of Semi-inclusive π^0 production as Validation of Factorization
- E12-13-010 Exclusive Deeply Virtual Compton and π^0 Cross Section Measurements in Hall C

(E12-13-007 & E12-13-010 can run as one run group – first run group in Hall C)

- E12-14-003 Wide-angle Compton Scattering at 8 and 10 GeV Photon Energies
- E12-14-005 Wide Angle Exclusive Photoproduction of π^0 Mesons

(runs as run group with E12-14-003)

E12-14-006 – Initial State Helicity Correlation in Wide-Angle Compton Scattering

- Ideas exist for future experiments and new scientific directions taking advantage of the compatibility of NPS with Hall infrastructure
 - ^o Timelike Compton Scattering with transverse target
 - [°] Beam option for real photon experiment
 - WACS with SBS in Hall A and NPS
 - DVCS with polarized targets

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- \rightarrow See talk by J. Wagner
- \rightarrow See talk by J. Zhang
- \rightarrow See talk by S. Abrahamyan

EXP. NO.	Hall	Title	Spokespersons	Institutions	Beam Days	Rating	PAC	Run Group
E12-13-007	С	Measurement of Semi-Inclusive π o Production as Validation of Factorization	R. Ent	JLab	25	A-	40	A
			T. Horn	CUA				
			H. Mkrtchyan	Yerevan				
			V. Tadevosyan	Yerevan				
E12-13-010	С	Exclusive Deeply Virtual Compton and Neutral Pion Cross-Section Measurements in Hall C	C. Munoz Camacho	IPN Orsay	53	A	40	A
			R. Paremuzyan	IPN Orsay				
			T. Horn	CUA				
			C. Hyde	ODU				
			J. Roche	Ohio U				
E12-14-003	С	Wide-angle Compton Scattering at 8 and 10 GeV Photon Energies	B. Wojtsekhowski	JLab	18	A-	42	В
			D. Hamilton	Glasgow				
			S. Sirca	Ljubljana				
E12-14-005	С	Wide Angle Exclusive Photoproduction of πο Mesons	D. Dutta	Miss. State	18	В	42	В
			M. Amaryan	ODU				
			H. Gao	Duke				
			M. Kunkel	ODU				
			S. Sirca	Ljubljana				
			I. Strakovsky	GWU				
E12-14-006	С	Initial State Helicity Correlation in Wide-Angle Compton Scattering	D. Keller	UVa	15	В	42	С
			D. Day	UVa				
			J. Zhang	UVa				
Approved PAC days 129 Run Group days							86	

NPS status



Global design has been frozen for last two years and reviewed well

- In ideal case would use new $PbWO_{a}$ crystals
 - Global availability of high quality crystals needs to be taken into account

 \rightarrow See talks by R. Novotny and C. Munoz-Camacho

- Taking advantage of existing $PbWO_4$ crystals from HyCAL, one arrangement is in a 36x30 matrix covering 25 msr at distance of 4 m from target (~1100 crystals)
- \circ Could use PbF₂ from DVCS/HA to fill out solid angle if only ~600 PbWO₄ available
- Component optimizations and studies
 - ^o PMT active base design [V. Popov, H. Mkrtchyan, NSSS2012-1098]
 - ^o Initial drawings of calorimeter and sweeping magnet \rightarrow See talk by P. Brindza
 - Prototype of the NPS was constructed

 \rightarrow See talk by A. Mkrtchyan

2015 NSF/MRI funding application in preparation

 \rightarrow Discussion this afternoon

 2014 NSF MRI funding application received very favorable comments on educational, leadership and technical aspects

Goals of this meeting

- Formulate a plan for NPS funding and how we should move ahead with it
- Discuss collaboration with and support for NPS from JLab
- Discuss optimization of NPS components
 - ^o Planning for crystal irradiation and curing system efficiency tests in Idaho
 - Discussion of PbWO₄ availability
- Begin discussion of future experiments with NPS
- Writing of a White Paper about the NPS and its science program
 - For LRP planning to submit before Thanksgiving
- Preparation of NPS science slides





Timelike Compton Scattering and PWO Studies

- 9:00 9:15 Welcome and Plans for the Day
- 9:15 10:00 TCS with Transversely Polarized Targets Jakub Wagner
- 10:00 10:15 Break
- 10:15 11:00 PWO Studies at PANDA Rainer Novotny
- 11:00 11:45 PWO and NPS Prototype Studies Arthur Mkrtchyan
- 11:45 12:15 PWO Studies for the EIC Calorimeter Carlos Munoz-Camacho
- 12:15 12:30 Discussion
- 12:30 1:30 Lunch

Afternoon Agenda

NPS and Physics Program Discussion

- 1:30 2:00 Laboratory Perspective Steve Wood
- 2:00 2:30 NPS Science Overview Charles Hyde
- 2:30 2:50 Beam Option for RCS Experiment- Jixie Zhang
- 2:50 3:10 WACS with SBS in Hall A and the NPS Sergei Abrahamyan
- 3:10 3:25 Future NPS Experiments Discussion
- 3:25 3:40 Break
- 3:40 4:10 Magnet Plans Paul Brindza

4:10 – 4:30 – Readout System Options/Electronics – Alexandre Camsonne

4:30 – 5:30 – NPS Funding Scenarios Discussion