Posítron Working Group Workshop

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University of Virginia



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Physics status

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- The JLab Positron Working Group has established a strong physics case in support of the development of positron beams at CEBAF.
- This final version of the JLab Positron White Paper gathers 20 peer-reviewed conceptual experiments, and 230 authors from 75 institutions worldwide.

E. Voutier

Proposals status

Positron Partial Program Summary

Experiment		Measurement Configuration			Beam Parameters					
Label	Short	Hall	Detector	Torgot	Dolority	p	P	Ι	Time	PAC
(EPJ A)	Name	Hall	Detector	Target	1 Ofai fuy	$({ m GeV}/c)$	(%)	(μA)	(d)	Grade
Two Photon Exchange Physics										
57:144	H(e, e'p)	В	$CLAS12^+$	H_2	$+/{s}$	2.2/3.3/4.4/6.6	0	0.060	53	
57:188	$H(\vec{e}, e'\vec{p})$	Α	ECAL/SBS	H_2	$+/{p}$	2.2/4.4	60	0.200	121	
57.100	r_p	в	PRod II	H_2		0.7/1.4/2.1	0	0.070	40	
51.155	r_d	D	1 1040-11	D_2	T	1.1/2.2	0	0.010	39	
57:213	$\overrightarrow{\mathrm{H}}(e,e'p)$	Α	BB/SBS	NĦ₃	+/s	2.2/4.4/6.6	0	0.100	20	
57:290	H(e, e'p)	Α	HRS/BB/SBS	H_2	+/s	2.2/4.4	0	1.000	14	
57:319	SupRos	Α	HRS	H_2	$+/{p}$	0.6 - 11.0	0	2.000	35	
58:36	A(e,e')A	Α	$_{ m HRS}$	${\rm He}$	$+/{p}$	2.2	0	1.000	38	
Nuclear Structure Physics										
57:186	p-DVCS	В	CLAS12	H_2	$+/{s}$	2.2/10.6	60	0.045	100	C2
57:226	n-DVCS	В	CLAS12	D_2	$+/{s}$	11.0	60	0.060	80	
57:240	p-DDVCS	Α	SoLID^{μ}	H_2	$+/{s}$	11.0	(30)	3.000	100	
57:273	He-DVCS	В	CLAS12/ALERT	$^{4}\mathrm{He}$	$+/{s}$	11.0	60			
57:300	p-DVCS	\mathbf{C}	SHMS/NPS	H_2	+	6.6/8.8/11.0	0	5.000	77	C2
57:311	DIS	A/C	HRS/HMS/SHMS		+/s	11.0				
57:316	VCS	С	HMS/SHMS	H_2	$+/{s}$		60			
Beyond the Standard Model Physics										
57:173	C_{3q}	A	SoLID	D_2	$+/{s}$	6.6/11.0	(30)	3.000	104	D
57.253	LDM	в	PADME	\mathbf{C}	+	11.0	0	0.100	180	
01.200	LDM		ECAL/HCAL	$PbW0_4$		11.0	0	0.100	120	
57:315	CLFV	A	$SoLID^{\mu}$	H_2	+	11.0				
Total (d)							tal (d)	1121		

 $\rm CLAS12^+ \equiv \rm CLAS12$ implemented with an Electromagnetic Calorimeter in the Central Detector

- $SoLID^{\mu} \equiv SoLID$ complemented with a muon detector
- + Secondary positron beam
- -s Secondary electron beam
- $-_p$ Primary electron beam

(30) Do not require polarization but would take advantage if available at the required beam intensity

- The partial positron program represents 5 calendar years of 2 halls operation, at a rate of 36 weeks of beam per year with 50% accelerator efficiency.
- The C2 approval of the DVCS proposals contributed to the motivations of a specific e⁺ R&D accelerator program at JLab.







- The JLab Positron Working Group is meant to help and promote positron beam physics at CEBAF, and to possibly contribute to the technical development of positron beams.
 - Review of new proposals
 - Development of new ideas
 - Review of past proposals

- Enrich the scientific life and exchanges of the e⁺ communitty
- Renew the JPos workshop series (JPos09, JPos17...)
- o ...
- The JLab Positron Working Group would benefit to evolve in a more organized structure in the perspective of enriching the positron science at JLab, improving its scientific impact, allowing for a better formal representation, etc... while keeping its unique nature bringing together theorists, experimentalists, and accelerator physicists.