Input from Hall A

SoLID Collaboration Meeting Jefferson Lab - January 10-11, 2019







Hall A Experiment Schedule

(See https://www.jlab.org/exp_prog/experiment_schedule/2017/20170914.1_ExpSch.pdf)

| | Spring | Fall | Spring | Fall | Spring | Summer | Fall |
|------------|-----------|---|--|--|--------------------|--------|------|
| CY 2017 | Ar(e,e'p) | ³ H/ ³ He group* | | | | | |
| CY 2018 | | | ³ H/ ³ He group | ³ H/ ³ He group | YOU ARE HERE | | |
| CY 2019 | | | | | APEX | PREX2 | CREX |

DVCS, G_M^p preceding

SBS 2020 MOLLER, SoLID to follow

*Very brief physics run (~couple days only) Experiments in red represent PAC "high impact" experiments

E12-06-114 DVCS – first JLab Experiment at 11 GeV

100 PAC days approved:

- High impact experiment for nucleon 3D imaging program

- High precision scaling tests of DVCS cross section at fixed $x_{\rm B}$

- CEBAF12 allows to explore for the first time the high x_B region

50% of experiment planned & completed in 2014-2016





Analysis status:

- Preliminary DVCS cross sections available for all 9 kinematic settings (and presented at SPIN 2018)
- Systematic studies being finalized
- Publication to be submitted before Summer'19
- π⁰ electroproduction results and publication will follow soon afterwards



FIRST USE OF ³H TARGET AT ELECTRON LAB IN 3 DECADES



- Running tritium family of experiments in 2017/2018 4 completed including MARATHON 3H/3He, SRC (2), ΛNN bound state
- SRC (e,e'p) results first publication underway next slide
- Expect first MARATHON results to be from direct nuclear ratios: D/p, ³H/³He, ³H/d,...



HALL A TRITIUM (and Argon) RUNNING COMPLETED



APEX (AND PREX2/CREX) INSTALLATION UNDERWAY



November 26, ³H program completed – tritium target on pivot



Tritium de-installation, pivot area clear



Pivot area 1/8/19

<u>Also</u> preparing for in-beam PREX2/CREX MOLLER and Compton polarimetry testing at end of APEX run

Installed:

- APEX septum
- APEX target chamber
- APEX corrector magnets Designed for common installation components with PREX2/CREX





MAJOR SBS COMPONENTS INCLUDING DEPENDENCIES AT JLAB, UNDERGOING FINAL TESTING, LOOKING TO RUN AFTER PREX2/CREX





with ~11 atmospheres of gas by chilling the cell to a temperature near that of LHe. The target is inside the closed metal dewar box.



5-12/2020 JLab Down for CHL2K cold box – SBS installation opportunity!

RECENT SOLID ACTIVITIES

- Status meeting at DOE Headquarters with Office of Nuclear Physics July 13, 2018
- Revised pCDR (with updated cost estimate) submitted to JLab Director's Office December 17, 2018
 - Base equipment configuration -US request
 - Enhanced base equipment with foreign contributions
- Preparing for Director's Review early CY2019
- Anticipating Science Review to follow in CY2019



| | Light Gas Cherenkov: |
|--|----------------------------------|
| ECal: UNIVERSITY of VIRGINIA | |
| · 小书外礼 · · · · · · · · · · · · · · · · · · · | Heavy Gas Cherenkov: |
| SHANDONG UNIVERSITY | |
| GEM: Iniversity Virginia | |
| 一 中国科学技术大学 University Science and Teacherry of China | Magnet: Jefferson Lab Argonne |
| () 「 新 新 大 学 Tsinghus University | Simulations: |
| | Argonne |
| Tsinohua University | SYRACUSE UNIVERSITY |



JLAB SOLID ACTIVITIES

- Engineering and design (see Whit's talk
 - Outer steel to arrive from Cornell Summer 2019
- Magnet preparations (P. Brindza et al)
 - Looking towards cold test
 - Instrumentation and controls (reduce highest schedule risk)
- Data acquisition (see Alex's talk)
 - Also high rate GEM test stand (TDIS+, E. Jastrzembski)
- Slow controls (see Brad's talk)
- Software development (see Ole's talk)
- Polarized ³He target development
- Polarimetry (also for PREX2/CREX,..)
- Regular parity quality beam meetings
- Magnetic field analysis
- Project planning
 - Cost updates







Hall A Collaboration Winter Meeting 30-31 January 2019



Slide 10

Thanks! Any questions?

