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**E12-06-121**

**Analysis Timeline, Personnel,  
and Publication Plan**

**Spokespeople:**

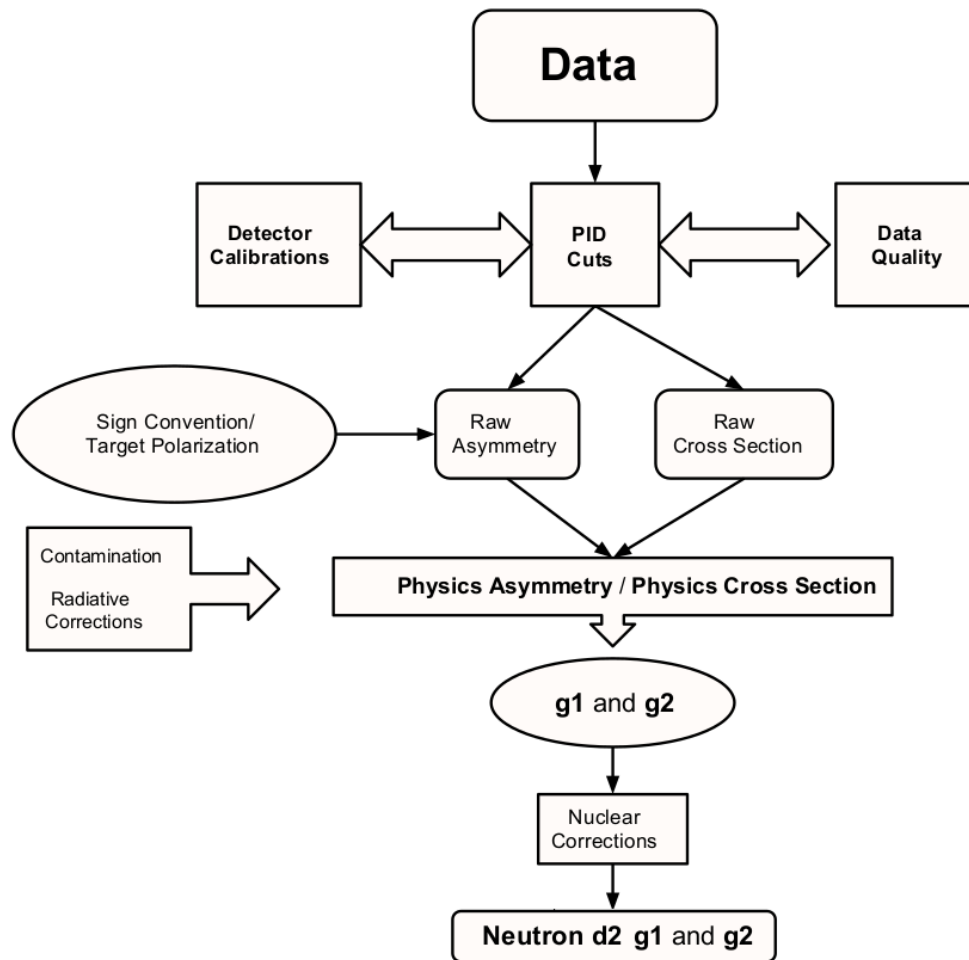
**T. Averett, W. Korsch, Z.E. Meziani, B. Sawatzky**

**Brad Sawatzky  
Jefferson Lab**

# Analysis Readiness

- Software needed for analysis is already in place
  - HCANA
    - » ROOT based online and offline analysis package
    - » New analyzer cross-checked against old ENGINE analyzer using old HMS data
    - » Same analysis engine used for experiments on the floor now
- Simulations / Acceptance codes available
  - SIMC, SAMC
- Radiative Corrections
  - Same process as used for E06-014, updated for new kinematics
  - Toolkit already in place
- Target analysis procedure
  - Basically same process as used in 2008/9.
- $^3\text{He}$  → neutron corrections
  - In place for lower-x data, need additional support for high-x data
  - Methodology is available, will work with Wally Melnitchouk et al. to finalize.
- General Analysis templates available from E06-014 (and others)
  - Provides a clear analysis path from data w/ lessons learned for similar measurement.

# Analysis Flow Chart



## Rough Milestones

- 2 months
  - Screen run list
  - Establish analysis framework
  - Detector calibrations
- 4 months
  - Final optics, good PID
  - Target polarimetry analysis
- 6 months
  - Acceptance calculations
  - Finalize target polarimetry
  - Begin 'applied' work on necessary nuclear corrections (w/ Theory support)
- 12 months
  - Begin Rad. Correction analysis
  - Initial  $^3\text{He}$  cross section extractions
- 18 months
  - Finalize Rad. Corrections
  - Finalize Nuclear corrections
  - Finalize Systematics
- Target first short paper: 18 months
- Long paper: 30 months

(Above) Figure 8.1(modified) from  
M. PosikE06-014 (d2n 2009) dissertation

# Excellent Analysis 'Templates' from E06-014

- E06-014 ran in Hall A 2009
  - Extracted  $d_{2n}$ ,  $g_{1n}$ ,  $g_{2n}$  using very similar equipment and analysis methodology
  - Experience and documented procedures will be invaluable
- PhD Dissertations:
  - [D. Flay dissertation](#) (Temple U.)
  - [D. Parno dissertation](#) (CMU)
  - [M. Posik dissertation](#) (Temple U.)

# Analysis Personnel for E12-121 (Preliminary)

- Z.E. Meziani (Temple U.)
  - PostDoc
  - Grad Student (Shuo Gia)
- W. Korsch (U. of Kentucky)
  - Grad Student (TBD)
- T. Averett (William & Mary)
  - Grad Student (Junhao Chen)
- B. Sawatzky (JLab)

# Charge Items Addressed

5. Are the responsibilities for carrying out each job identified, and are the manpower and other resources necessary to complete them on time in place?

8. Has readiness for expedient analysis of the data been demonstrated? What is the projected timeline for the first publication?

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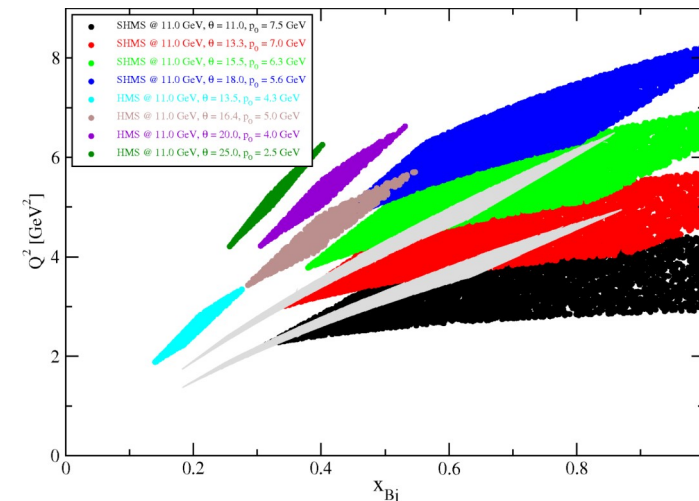
# Backup Slides

# E12-06-121: $d_2^n, g_2^n$

- Hall C: SHMS + HMS
- Two beam energies:
  - 11 GeV/c (production)
  - 4.4 GeV/c (calib.)
- Beam Current
  - 30 uA (production)
  - 60 uA (max, calib.)
- Target: 40 cm Polarized 3He
- Each arm measures an absolute polarized cross section independent of the other arm.
- SHMS collects data at
  - $\Theta = 11^\circ, 13.3^\circ, 15.5^\circ$  and  $18.0^\circ$  for 125 hrs each
  - data from each setting divided into 4 bins
- HMS collects data at
  - $\Theta = 13.5^\circ, 16.4^\circ, 20.0^\circ$  and  $25.0^\circ$  for 125 hrs each

SHMS Production		
Setting	$P_0$	Angle
A	7.5	$11.0^\circ$
B	7.0	$13.3^\circ$
C	6.3	$15.5^\circ$
D	5.6	$18.0^\circ$

HMS Production		
Setting	$P_0$	Angle
A'	4.3	$13.5^\circ$
B'	5.1	$16.4^\circ$
C'	4.0	$20.0^\circ$
D'	2.5	$25.0^\circ$





# History: E06-014 The Neutron $d_2$ (Hall A, 2008/9)



- A measurement of the neutron  $d_2$  completed in 2009
  - Polarized  $^3\text{He}$  target
  - Large acceptance detector to measure asyms (BigBite)
  - High-precision device to measure unpol. x-sec (HRS)
  - Focus:  $d_2$ ,  $g_2$  on the neutron
    - » extracted  $A_1$ ,  $g_1$  as well